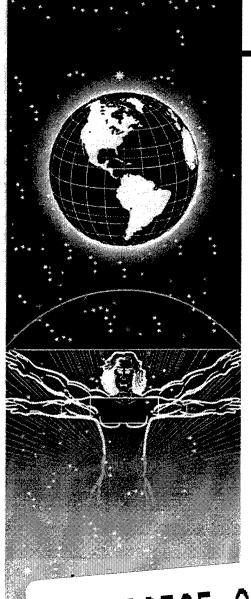
AFRL-HE-WP-TR-1998-0016



UNITED STATES AIR FORCE RESEARCH LABORATORY

INTERLABORATORY STUDY (ILS) OF THE STANDARD TEST METHOD FOR MEASURING THE NIGHT VISION GOGGLE-WEIGHTED TRANMISSIVITY OF TRANSPARENT PARTS

> Alan R. Pinkus Harry L. Task

HUMAN EFFECTIVENESS DIRECTORATE CREW SYSTEM INTERFACE DIVISION WRIGHT-PATTERSON AFB OH 45433-7022

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MARCH 1998

INTERIM REPORT FOR THE PERIOD APRIL 1995 TO DECEMBER 1997

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Human Effectiveness Directorate Crew System Interface Division 2255 H Street Wright-Patterson AFB, OH 45433-7022

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AFRL-HE-WP-TR-1998-0016

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This technical report has been reviewed and is approved for publication.

FOR THE COMMANDER

HENDRICK W. RUCK, PhD

Chief, Crew System Interface Division

Air Force Research Laboratory

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1. TITLE

INTERLABORATORY STUDY (ILS) OF THE STANDARD TEST METHOD FOR MEASURING THE NIGHT VISION GOGGLE-WEIGHTED TRANSMISSIVITY OF TRANSPARENT PARTS

Committee F-7 on Aerospace and Aircraft Enclosures. Subcommittee F-7.08 on Transparent Enclosures and Materials

RR: P94-02: XXXX

2. INTRODUCTION

There are several ASTM Standards that address light transmissivity through transparencies (ASTM Standards F 1316-90D and 1003-61) in the visible spectrum (400 through 700 nm). However, night vision goggles (NVGs) are now being used in aircraft and other applications (e.g., marine navigation, surveillance, personnel carriers) with increasing frequency. These devices amplify both visible and near-infrared (NIR) spectral energy. A transparency may have excellent visible transmissive characteristics but could have poor NIR transmissivity. Overall visual performance (acuity) can be degraded if the observer uses the NVGs while looking through a transparency that has attenuated transmissivity in the NIR region (Pinkus and Task, 1997, see Appendix A). ASTM P94-02, Standard Test Method for Measuring Night Vision Goggle-Weighted Transmissivity of Transparent Materials (see draft in Appendix B) addresses this issue. This ILS was undertaken in order to determine the precision of P94-02. The method describes both analytical and direct measurement techniques that determine the NVG-weighted transmissivity (T_{NVG}) of transparent pieces including ones that are large, curved, or held at the installed position. This ILS investigated just the analytical method since only one lab is presently capable of implementing the direct test method. T_{NVG} is the integrated value (450 through 950 nm) of the spectral transmissivity of a transparent part weighted (multiplied) by both the spectral sensitivity of a given set of NVGs and the light source, divided by the integrated value of the NVGs times the light source. The higher the T_{NVG} the more compatible a transparency is with NVGs, i.e., there is more light energy available to be amplified by the goggles which usually corresponds to better visual acuity performance of the observer (finer detail seen).

3. TEST PROGRAM INSTRUCTIONS AND TEST METHOD

The cover letter for test instructions to participating labs, follows.

SUBJECT: Interlaboratory Study for ASTM Standard P94-02: Standard Test Method for Measuring Night Vision Goggle-Weighted Transmissivity of Transparent Materials.

FROM: AL/CFHV

2255 H Street, Room 300

Wright-Patterson AFB OH 45433-7022

Dear Colleague,

Please find enclosed the instructions and materials needed by you to conduct spectral transmissivity measurements as discussed at the April 8th, 1997 ASTM Task Force committee meeting in St. Louis. The test has been simplified by the elimination of the Excel spread sheet. I am now simply supplying four (4) plastic samples. The spectral transmissivity scan data are then returned to me for completion of the data

analysis of which the details are described in the attached draft test method [P94-02, see Appendix B]. You may retain the draft for your use and records.

The data collection procedure is as follows:

(1) Please handle the samples carefully as to not cause any (further) damage.

(2) Do not clean them with any solvents. Use part specific, prescribed cleaning materials and methods.

(3) Spectral measurements are made from 450 nanometers (nm) through 950 nm in 5 nm incremental steps, with the arrow on top and pointed towards the spectrophotometer's sensor.

(4) Perform sample measurements sequentially, i.e., measure #1, #2, #3, #4.

(5) Repeat Step (4), five times, per instrument, yielding 20 sets of spectral data.

Thus, the test sequence for the samples is:

Measure samples	[#1, #2, #3, #4]
Repeat	[#1, #2, #3, #4]

(6) Repeat this process on more than one instrument, if available (instruments are statistically analyzed as "labs" and I need as many "labs" as possible).

(7) Label each spectral printout with:

Sample # and repetition #

Instrument make and model #

Date and time of the measurement

- (8) These measurements can be made over a period of days, if desired. The variability in the data due to an extended measurement period will more accurately reflect real-world conditions (i.e., variability due to temperature, positioning, drift, etc.).
- (9) Since these test samples need to be sent to several labs, please complete all measurements within two weeks of receipt and return data and samples to the address, above, so I can forward the samples to the next company.

Sincerely,

Alan Pinkus, PhD Research Psychologist

6 Attachments:

- 1. Cover Letter
- 2. Plastic Sample #1
- 3. Plastic Sample #2
- 4. Plastic Sample #3
- 5. Plastic Sample #4
- 6. Draft Test Method P94-02

4. LIST OF PARTICIPATING LABORATORIES

There were six labs (instrument types).

Lab #1: EG&G Radoma GS1252 Spectraphotometer (15 May 1997) Air Force Research Lab/HECV (formally Armstrong Lab/CFHV)

2255 H Street, Room 300

Wright-Patterson AFB OH 45433-7022

POC: Alan Pinkus (937-255-8767)

Lab #2: Cary 5G Spectraphotometer (16 Jun 1997) Air Force Research Lab (formally Armstrong Lab/OEO) 8111 18th Street

Brooks AFB TX 78235-5215

POC: Dennis Maier (210 536-3709)

Lab #3: Perkin Elmer Lambda 9 Spectraphotometer (16 Jun 1997)

Air Force Research Lab (formally Armstrong Lab/OEO)

8111 18th Street

Brooks AFB TX 78235-5215

POC: Dennis Maier (210 536-3709)

Lab #4: Hitachi U-2000 (2 Jul 1997)

Polycast, Inc. 70 Carlisle Pl

Stamford CT 06902

POC: Kuang Tran (203-327-6010

Lab #5: Model 736 Radiometer (21 Jul 1997)

Texstar, Inc. 1170 108th Street PO Box 534036

Grand Prairie TX 75053-4036

POC: Lance Teten (214-647-1366)

Lab #6: UV/VIS/NIR (8 Sep 1997)

Sierracin/Sylmar Corp. 12780 San Fernando Rd

Sylmar CA 91342

POC: John Raffo (818-362-6711)

5. DATA REPORTS

See Appendix C

6. STATISTICAL DATA SUMMARY

The four test stimuli were 2 inch square samples of transparent plastic material: #1, 0.875 inches thick acrylic, #2 laminated (F-111), #3 gold-coated (F-16) and #4, 3 mm acrylic. Samples #2 and #3 were cut from actual aircraft windscreens. The main source of error in the test method is due to the variability among spectraradiometric (spectraphotmetric) instruments not the T_{NVG} calculation.

Absolute radiometric calibration of the instrument is not essential since T_{NVG} is a ratio. In this ILS, the six instruments were treated as labs. The samples were measured using spectraradiometric instruments but the actual calculation of T_{NVG} (in accordance with test method P94-02) was performed later, prior to data analysis. T_{NVG} equals the integral with respect to wavelength, of the transparent part's spectral transmissivity $[P(\lambda)]$ times the spectral energy distribution of the light source $[S(\lambda)]$ times the NVG spectral sensitivity $[G(\lambda)]$ divided by the integral with respect to wavelength, of the spectral energy distribution of the light source times the NVG spectral sensitivity. Since the specific spectral energy distribution of the light source in Equation 1 is typically not known for operational conditions (it depends on the spectral energy distribution of the illumination source on the scene and the spectral reflectivity of the various objects in the scene) the NVG-weighted transmission coefficient was calculated using $S(\lambda) = 1$ for all wavelengths. This simplifies the equation and typically does not significantly affect the results for the vast majority of broad-band reflectance distributions normally encountered. (Pinkus and Task, 1997; Equation 1 in Appendix A). Just the analytical method section of P94-02 was studied since only one lab (Air Force Research Lab/WPAFB/HECV, formally the Armstrong Lab) has the capability to perform the other, direct method. An ILS for the direct method may be performed at a later date. Tables 1 through 4 summarize the ILS results.

Tables 1 through 4. Results summary of four plastic samples (thick acrylic, laminated, gold-coated and 3 mm acrylic), measured by 6 labs (instruments) 5 times each: T_{NVG} means (\bar{x}) , standard deviations (s), cell deviations (d), h and k statistics, grand mean (GM), repeatability (S_r), standard deviation of cell averages ($S_{\bar{x}}$), as defined in ASTM Practice E 691.

Table 1									1.92	1.75
#1 (THICK)	RE	PS								
LABS	1	2	3	4	5	\overline{X}	S	d	h	k
EG&G	0.895	0.888	0.897	0.899	0.877	0.891	0.009	-0.012	-0.987	0.846
CARY 5G	0.904	0.903	0.899	0.904	0.903	0.903	0.002	-0.001	-0.072	0.173
PERK/ELM L9	0.901	0.898	0.894	0.896	0.890	0.896	0.004	-0.008	-0.634	0.378
HIT U-2000	0.902	0.902	0.902	0.903	0.902	0.902	0.000	-0.001	-0.085	0.015

736 RADIOM.	0.936	0.924	0.926	0.921	0.926	0.927	0.006	0.023	1.897	0.532
750 10 10101										
UV/VIS/NIR	0.902	0.903	0.901	0.904	0.900	0.902	0.001	-0.001	-0.119	0.120

GM	Sx	S_r	S_R
0.903	0.012	0.011	0.015
	95%=	0.030	0.043
		r	R

Table 2

#2 (LAM)	RE	PS								
LABS	1	2	3	4	5	\overline{X}	s	d	h	k
EG&G	0.853	0.850	0.861	0.859	0.860	0.857	0.005	-0.010	-0.816	0.432
CARY 5G	0.868	0.866	0.867	0.862	0.864	0.865	0.002	-0.001	-0.114	0.202
PERK/ELM L9	0.867	0.864	0.858	0.862	0.857	0.861	0.004	-0.006	-0.439	0.382
HIT U-2000	0.869	0.868	0.865	0.870	0.858	0.866	0.005	-0.001	-0.080	0.462
736 RADIOM.	0.897	0.897	0.881	0.888	0.895	0.892	0.007	0.025	1.964	0.646
UV/VIS/NIR	0.863	0.860	0.862	0.859	0.859	0.860	0.002	-0.006	-0.514	0.168

Table 3

#3 (GOLD)	RE	PS								
LABS	1	2	3	4	5	\overline{X}	S	d	h	k
EG&G	0.533	0.539	0.540	0.541	0.527	0.536	0.006	-0.007	-0.844	0.789
CARY 5G	0.547	0.547	0.546	0.546	0.547	0.547	0.001	0.003	0.375	0.067
PERK/ELM L9	0.541	0.541	0.535	0.535	0.532	0.537	0.004	-0.006	-0.762	0.520
HIT U-2000	0.541	0.541	0.541	0.543	0.542	0.542	0.001	-0.002	-0.201	0.117
736 RADIOM.	0.561	0.557	0.563	0.550	0.564	0.559	0.006	0.016	1.834	0.777
UV/VIS/NIR	0.539	0.543	0.541	0.538	0.540	0.540	0.002	-0.003	-0.402	0.259

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Table 4										
#4 (3mm)	RE	PS								
LABS	1	2	3	4	5	\overline{X}	s	d	h	k
EG&G	0.878	0.878	0.880	0.886	0.877	0.880	0.004	0.002	0.300	0.583
CARY 5G	0.879	0.881	0.879	0.878	0.877	0.879	0.001	0.001	0.096	0.218
PERK/ELM L9	0.878	0.875	0.871	0.873	0.865	0.872	0.005	-0.006	-0.869	0.781
HIT U-2000	0.881	0.876	0.879	0.879	0.881	0.879	0.002	0.001	0.181	0.313
736 RADIOM.	0.897	0.884	0.891	0.879	0.890	0.888	0.007	0.010	1.573	1.133
UV/VIS/NIR	0.869	0.872	0.870	0.869	0.870	0.870	0.001	-0.008	-1.280	0.209

The critical values of the h and k statistics, used to determine outliers (ASTM Practice E 691, Table 12, p. 14, where p=6 and n=5), are 1.92 and 1.75, respectively. Only one lab (Table 2, sample #2, 736 Radiometer) exceeded the critical h (bolded) at 1.964. The data were reexamined for typographical errors but none were found. The prescribed method was followed so the data were retained for final analysis. Table 5 summarizes the repeatability (S_r) and reproducibility (S_R) values and Table 6 summarizes the 95% repeatability (S_r) limits and the 95% reproducibility (S_r) limits for the individual samples as well as the means.

Table 5. Repeatability (S_r) and reproducibility (S_R) values in T_{NVG} , derived from the data sets in Appendix C.

`	REPEATABILITY (S,) WITHIN LABS	REPRODUCIBILITY (S _R) BETWEEN LABS
SAMPLE #1	0.011	0.015
SAMPLE #2	0.011	0.016
SAMPLE #3	0.007	0.011
SAMPLE #4	0.006	0.008
MEAN	0.009	0.013

Table 6. 95% repeatability (r) limits and 95% reproducibility (R) limits in T_{NVG} .

	95% r LIMITS WITHIN LABS	95% R LIMITS BETWEEN LABS
SAMPLE #1	0.030	0.043
SAMPLE #2	0.030	0.044
SAMPLE #3	0.021	0.030
SAMPLE #4	0.017	0.023
MEAN	0.025	0.035

 S_r ranged from 0.006 to 0.011 T_{NVG} S_R ranged from 0.008 to 0.016 T_{NVG}

r ranged from 0.017 to 0.030 T_{NVG} R ranged from 0.023 to 0.044 T_{NVG}

Since the accuracy of the measurements should not and did not depend upon the type of the transparent material, it is logical to calculate a mean T_{NVG} of the 4 sample sizes to derive the composite precision values indicative of this method.

The composite (mean) repeatability (S_r) and reproducibility (S_R) values:

Mean
$$S_r = 0.009 T_{NVG}$$

Mean $S_R = 0.013 T_{NVG}$

The composite (mean) 95% limits for repeatability (r) and 95% limits for reproducibility (R) values:

Note: The 95% limits were calculated using the formulae, below. Since the 95% limits are based on the difference between two test results, the $\sqrt{2}$ factor was incorporated into the calculation (ASTM Practice E 177; 27.3.3).

r = 95% repeatability limit (within laboratories) $S_{z} =$ repeatability standard deviation

$$r = 1.960*\sqrt{2}*S_r$$

R = 95% reproducibility limit (between laboratories) $S_R =$ reproducibility standard deviation

$$R = 1.960*\sqrt{2}*S_{R}$$

7. RESEARCH REPORT SUMMARY

Precision: An interlaboratory study was conducted to determine the precision of ASTM P94-02 (draft), Standard Test Method for Measuring Night Vision Goggle-Weighted Transmissivity of Transparent Materials. Six labs (instruments) were used to measure four plastic samples, five times each. Statistical analysis (ASTM Standard Practices E 691 and E 177) revealed that the method's mean repeatability (S_r) was 0.009 T_{NVG} and the mean reproducibility (S_R) was 0.013 T_{NVG} . The mean 95% limits for repeatability (r) was 0.025 T_{NVG} and the mean 95% limits for reproducibility (R) was 0.035 T_{NVG} .

Bias: The procedure in this test method has no bias because the NVG-weighted transmissivity is defined only in terms of the test method.

8. REFERENCES

F 1316-90 Standard Test Method for Measuring the Transmissivity of Transparent Parts. Annual Book of ASTM Standards, Vol. 08.01. Mar 1991.

D 1003-61 Standard Test Method for Haze and Luminous Transmittance of Transparent Parts. Annual Book of ASTM Standards, Vol. 15.09. Sep 1961.

Pinkus, A. and Task, H. L. (1997). The Effects of Aircraft Transparencies on Night Vision Goggle-Mediated Visual Acuity. SAFE Symposium 1997, Sep 8-10, pp. 93-104.

ASTM Standard Practice E 691. Conducting an Interlaboratory Study to Determine the Precision of a Test Method.

ASTM Standard Practice E 177. Use of the Terms Precision and Bias in ASTM Test Methods.

APPENDIX A. Pinkus, A. and Task, H. L. (1997). The Effects of Aircraft Transparencies on Night Vision Goggle-Mediated Visual Acuity. *SAFE Symposium 1997*, Sep 8-10, pp. 93-104.

THE EFFECTS OF AIRCRAFT TRANSPARENCIES ON NIGHTVISIONGOGGLE-MEDIATEDVISUALACUITY

Alan Pinkus, PhD and H. Lee Task, PhD
Armstrong Laboratory
Crew Systems Directorate
HumanEngineeringDivision
Wright-Patterson AFB OH

ABSTRACT

Night vision goggles (NVGs) are currently used in a wide variety of military aircraft that were not originally designed for NVGs. Likewise, the windscreens and canopies on these aircraft were not designed with NVGs Present day windscreens and in mind. canopies typically have one or more specialized coatings applied to them. These may be reasonably transparent for visible wavelengths but not so transparent for near infrared light to which the NVGs are sensitive. It was hypothesized that the major mechanism by which aircraft transparencies affect the operation of NVGs is through reduced light levels. This would mean that the key characteristic of interest for determining the effect of an aircraft transparency on the operation of the NVGs would be its transmission coefficient calculated using the spectral sensitivity of the NVGs. This hypothesis was tested by investigating visual acuity performance of trained observers viewing through NVGs for three levels of ambient illumination (1, 2 and

5 times starlight) and three levels of NVGweighted windscreen transmissivities (58. 76 and 100%). In addition, two levels of contrast were included in the study (20 and 70% modulation contrast). Three trained observers determined the orientation of a Landolt C using a two-alternative, forcedchoice step paradigm. A luminance-based model was developed to smoothly combine effects of illumination level transmission level for each contrast thus supporting the hypothesis. In addition, the results demonstrate the significant difference between individual observer's performance level and the increased difficulty (higher variability) of performance at lower contrast levels.

INTRODUCTION AND BACKGROUND

Night vision gogglesprovide observers with the ability to see very dimly illuminated nighttime scenes by amplifying ambient light from the red and near infrared spectral energy region (600 through 950 nm; see Fig. 1). Anything that reduces the light level getting to the NVGs will tend to reduce the

output luminance while at the same time decreasing the signal-to-noise ratio. This, in turn, tends to reduce the visual acuity of observers using the NVGs. These effects are most apparent at very low ambient light such as starlight illumination levels conditions. The basic hypothesis of this study is that it should not matter whether the light level is reduced by lowering the illumination level on the target area or by attenuating the light level getting to the NVGs by viewing through a transparency. This leads to the concept of equivalent illumination. For purposes of this study, equivalent illumination is the product of the

actual illumination level and the transmission coefficient of the transparency which one is viewing. As a specific example, the equivalent illumination for 2 times starlight actual illumination viewing through a 50% transmitting windscreen would be 1.0 starlight (2 times 0.5). This is the same equivalent illumination obtained for an actual illumination of 1 times starlight viewing through the NVGs with no intervening transparency (1 times 1.0). If the hypothesis is correct one would expect the visual acuity for these two conditions to be essentially the same (within the variability expected for human observations).

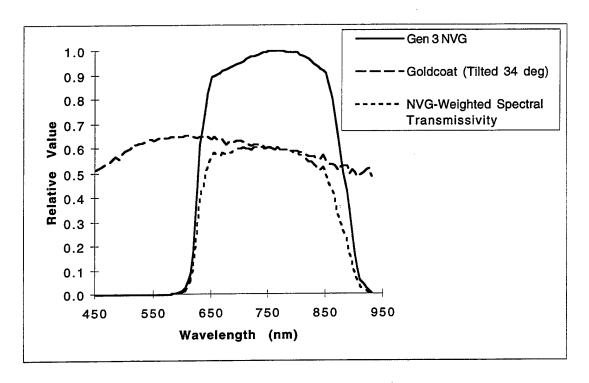


Figure 1. The relative value of a third-generation NVG, a gold-coated transparent sample (34 deg tilt) and its corresponding NVG-weighted spectral transmissivity plotted as a function of wavelength.

In order to determine how much an aircraft windscreen or canopy will reduce the light level by, it is necessary to measure or calculate the NVG-weighted transmission coefficient (T_{NVG}) . This is done by using the spectral sensitivity of a given NVG^{1,2,3}. Equation 1 describes the calculation for NVG-weighted transmissivity. T_{NVG} equals the integral with respect to wavelength, of transparent part's spectral the transmissivity $[P(\lambda)]$ times the spectral energy distribution of the light source $[S(\lambda)]$ times the NVG spectral sensitivity $[G(\lambda)]$ divided by the integral with respect to wavelength, of spectral the energy distribution of the light source times the NVG spectral sensitivity. Since the specific spectral energy distribution of the light source in Equation 1 is typically not known for operational conditions (it depends on the energy distribution of spectral illumination source on the scene and the spectral reflectivity of the various objects in the scene) the NVG-weighted transmission coefficient was calculated using $S(\lambda) = 1$ for all wavelengths. This simplifies the equation and typically does not significantly affect the results for the vast majority of broadband reflectance distributions normally encountered. Figure 1 shows the spectral transmissivity curve for one of the goldcoated samples used in this study. The third-generation NVG sensitivity curve is plotted for reference.

$$T_{NVG} = \frac{\int\limits_{450nm}^{950nm} P(\lambda)S(\lambda)G(\lambda)d\lambda}{\int\limits_{450nm}^{950nm} S(\lambda)G(\lambda)d\lambda}$$
(1)

where:

 T_{NVG} = NVG-weighted transmissivity

 $P(\lambda)$ = spectraradiometric scan through the transparent part

 $S(\lambda)$ = spectral energy distribution of the light source (equal to 1 for our calculations)

 $G(\lambda)$ = spectral sensitivity of the nightvision goggle

Undocumented reports from some aircrew in different aircraft indicated that transparencies, such as gold-coated F-16 canopies, may cause a reduction in NVG visual acuity compared uncoated transparencies. Investigation into the NVGweighted transmission level of currently fielded F-16 canopies revealed that there are at least three different gold coatings and two different indium-tin-oxide coatings in use. It was therefore the objective of this study to investigate the effect of coated transparent parts that included the full range of NVGweighted transmission coefficients that might be found in the field. Since we could not obtain samples of all of the different types of coated windscreens it was decided to use what samples we did have in such a way as to provide a fairly wide range of transmissivities. Two gold-coated sections of transparencies were available: one with a

fairly light coating and one with a relatively heavy coating. In order to expand the range even further, viewing through the heavilycoated sample was done at a tilted angle which made the transmission coefficient even smaller.

METHOD

Participants

The three participants in this study were not naive subjects in the traditional sense but highly trained psychophysical observers, two males and one female, ranging in ages from 35 to 46 years.

Apparatus and Stimuli

The tests utilized a new set of ITT Model F4949D (serial #3873) NVGs⁴ that had P-43 phosphor image intensifier tubes and a measured gain⁵ of about 6000. With the room lights off and the NVGs on, the observer first adjusted the interpupilary distance of the goggles. Then they adjusted the eyepiece lenses by looking at the dark ceiling with the goggles and focusing until the scintillation looked sharp. Objective lenses were focused by viewing a one-half moon illuminated, NVG resolution chart composed of square-wave gratings⁶.

All observations were made in a lighttight room. The observer sat in a chair behind a table with their eyes 9.14 m (30 ft) from the stimulus easel. On the table was a fixture that held an aircraft transparency sample and a foam board visual field mask which had a 15 cm high by 18 cm wide (6 by 7 in.)

aperture. The observer held the NVGs but could rest his or her elbows on the table while looking through the hole and transparency at the stimulus. The goggles were powered using a regulated external power supply.

The stimuli were Landolt C's⁷ printed using a high resolution photo-grade laser printer. All of the C's (in each set) were consecutively numbered 1 through n for ease of use with the computer program (see Procedure section) during the study. After the study, the observers' data were converted to Snellen equivalents. The high contrast (70% Michelson) set consisted of 69 C's ranging from 20/19.1 to 20/200.5 Snellen acuity for the 9.14 m viewing distance. C's 1 through 48 increased by about 2 minutes-of-arc (MOA) per step and C's 49 through 69 increased in about 2 to 4 MOA steps in order to insure a high upper range. The low contrast (20% Michelson) set consisted of 107 C's ranging from 20/19.1 to 20/236.8 Snellen acuity. For this set, C's 1 through 92 increased by about 2 MOA per step and C's 93 through 107 increased in about 2 to 4 MOA steps. The first stimulus presentation, as determined by the program, was always from the center of the set's range and all subsequent thresholds were found to be below this value.

The C's were mounted on 18 x 18 cm (7 x 7 in.) foam board. The letter and background were different gray levels, varied to achieve the two desired contrasts but maintain the same average reflectance. For presentation,

the C was placed onto a larger surround board 61 x 61 cm (24 x 24 in.) that matched either the high or low contrast Landolt C background reflectance as appropriate. The background board was held on an easel and had a small ledge that held the letter C in the center. The ledge was invisible when viewed through NVGs. The C was then easily placed onto the ledge with the gap oriented either up or down.

The experimenter's station was to the side of the stimulus easel. The computer's electroluminescent, backlighted liquid-crystal display was filtered and shrouded to eliminate any stray light from falling on the target pattern.

Three, precalibrated, 2856K incandescent lamps⁸ were used to easily change to the different illumination levels. Apertures varied their intensity without affecting the color temperature. Illumination levels used were: 1x starlight = $3.4x10^{-4}$ lx $(3.2x10^{-5}$ fc)⁹; 2x starlight = $6.7x10^{-4}$ lx $(6.2x10^{-5}$ fc); 5x starlight = $1.8x10^{-3}$ lx $(1.7x10^{-4}$ fc). A fourth lamp, set to about one-half moon illumination $1.3x10^{-1}$ lx $(1.2x10^{-2}$ fc) was used to illuminate an NVG resolution target⁶ during pretest goggle focusing.

Three transmission conditions were included in this study: a tilted heavily gold-coated

sample, a non-tilted lightly coated sample, and no intervening transparency (100% transmission, hereafter termed baseline or high T_{NVG}). The T_{NVG} for the heavily goldcoated sample tilted to a 34 deg orientation was 58% (hereafter termed low T_{NVG}). The untilted (normal) lightly gold-coated sample had 76% transmissivity (hereafter termed This study used three medium T_{NVG}). stimulus different combinations of illumination, with three different levels of T_{NVG} coefficient to achieve nine total levels of equivalent illumination. Table summarizes the nine equivalent illumination levels derived from the different illumination and T_{NVG} coefficient combinations.

Testing was conducted within randomized blocks of the lighting conditions because the observer had to adapt to that level before the First, an illumination source was randomly selected. Within that lighting level, the observer was tested with a randomized order of stimulus contrasts and transparency samples. Two levels of contrast (20 and 70%), three levels of illumination and three levels of T_{NVG} yielded nine experimental conditions for high contrast letters and nine experimental conditions for low contrast. The visual acuity through the NVGs for trained observers was measured as a function of these nine equivalent illumination levels.

Table 1. The nine different equivalent illumination levels produced by all combinations of the three levels of stimulus illumination and three levels of transparency T_{NVG} coefficients.

MULTIPLES OF STARLIGHT	LOW T_{NVG} coefficient $T_{NVG} = 58\%$	MEDIUM T_{NVG} coefficient $T_{NVG} = 76\%$	HIGH T_{NVG} coefficient $T_{NVG} = 100 \%$
1x	0.58	0.76	1
2x	1.16	1.52	2
5x	2.9	3.8	5

Procedure

A portable computer executed a twoalternative, forced-choice Step Program adapted from Simpson¹⁰. The experimenter started the Step Program which asked for the initial setup parameters: Landolt C upper and lower stimulus identification numbers (1 through 69 for high contrast or 1 through 107 for low contrast), confidence level (95%), number to criterion (5), maximum total number of trials (50) and a data file name. Using a conservative 95% confidence level caused the program to require a few more trials before converging to threshold.

The proper stimulus surround was placed onto the easel, a 1x, 2x or 5x starlight lamp was energized and the transparency sample placed into the fixture. The observer then partially dark adapted to the goggle output luminance for about 10 minutes. The Step Program instructed the experimenter to place a given numbered (size) Landolt C in an up or down, randomized position. The stimulus was blocked from the observer's view by the experimenter during placement onto the easel. The experimenter asked the observer if he or she was ready, unblocked the stimulus for about 4 seconds, then

The observer had to blocked it again. respond either "up" or "down". No feedback was ever given to the observer. The experimenter then removed the stimulus and entered the observer's response into the Step Program. Based on the response, the Step Program determined the next stimulus size and randomized its orientation. procedure was repeated until criterion was reached or the maximum number of trials were met. All observers converged before reaching the maximum number of trials. This procedure averaged about 10 minutes per experimental condition with five minute rests after each condition and additional rest after completion of each lighting condition.

RESULTS

The study presented a total of 1015 stimuli to the three observers. Threshold criterion (5 correct responses at smallest, reliably seen gap size) was reached in 19 trials on the average, 10 being the fastest and 38 the slowest (see Fig. 2 for an example). Snellen acuity, which served as the dependent variable, was calculated from the viewing distance and the gap size of the Landolt C with the standard conversion that 20/20

Snellen acuity corresponds to a gap size of one minute of arc. Table 2 is a summary of the results for the high contrast Landolt C condition listing the Snellen acuity for each illumination/transparency combination for each trained observer and the average across observers. The equivalent illumination column is the fraction of starlight that was

available to illuminate the target pattern after accounting for the transmission coefficient of the transparency. This value was calculated by multiplying the illumination level (1, 2, or 5 times starlight) by the transmission coefficient (0.58, 0.76, or 1.00) for each condition. Table 3 is a summary of the results for the low contrast condition.

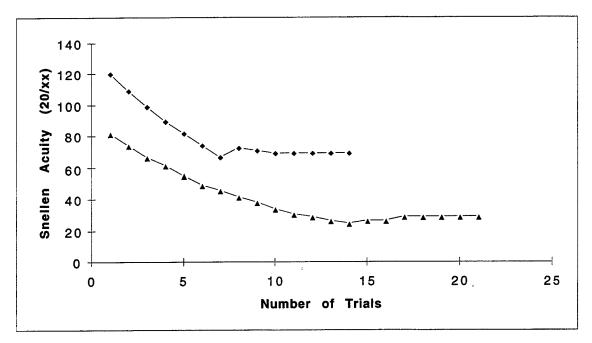


Figure 2. Typical Landolt C presentation sequences using the computer-based Step Program.

Table 2. Summary of high contrast (70%) stimuli data. All data are Snellen acuities (20/xx).

ILLUMINATION	T_{NVG}	EQUIV	OBSERVER	OBSERVER	OBSERVER	MEAN
(X STARLIGHT)	COEFFICIENT	ILLUM	1	2	3	
1x	LOW	0.58	66.8	63.0	61.1	63.6
1x	MEDIUM	0.76	61.1	59.2	49.7	56.7
1x	HIGH	1	53.5	51.6	47.7	50.9
2x	LOW	1.16	51.6	57.3	47.7	52.2
2x	MEDIUM	1.52	49.7	47.7	43.9	47.1
2x	HIGH	2	45.8	43.9	36.3	42.0
5x	LOW	2.9	36.3	40.1	36.3	37.6
5x	MEDIUM	3.8	36.3	32.5	34.4	34.4
5x	HIGH	5	36.3	32.5	34.4	34.4

Table 3. Summar	of low contrast	(20%)) stimuli data.	. All data are Snellen acuitie	es (20/xx).
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ILLUMINATION (X STARLIGHT)	T _{NVG} COEFFICIENT	EQUIV ILLUM	OBSERVER 1	OBSERVER 2	OBSERVER 3	MEAN
1x	LOW	0.58	114.6	103.1	149.0	122.2
1x	MEDIUM	0.76	128.0	105.0	126.1	119.7
1x	HIGH	1	108.9	99.3	107.0	105.1
2x	LOW	1.16	114.6	84.0	122.2	106.9
2x	MEDIUM	1.52	112.7	108.9	82.1	101.2
2x	HIGH	2	105.0	99.3	70.7	91.7
5x	LOW	2.9	101.2	93.6	74.5	89.8
5x	MEDIUM	3.8	68.8	87.9	68.8	75.2
5x	HIGH	5	47.7	74.5	61.1	61.1

DISCUSSION

Although none of the combination of conditions (illumination and transmission coefficient) permitted a direct test of the equivalent illumination hypothesis, it was possible to graph the Snellen acuity results against the equivalent illumination to see if it would produce a reasonably smooth, monotonically decreasing curve. This is the type of curve that would be expected since, in general, visual acuity improves (Snellen acuity value is smaller) as light level to the eye increases¹¹. Figures 3 and 4 show these graphs for the high contrast and low contrast conditions, respectively.

The graphs of Figures 3 and 4 include all of the individual observer data in addition to a dashed line that corresponds to the average for the three observers for each equivalent illumination condition. The high contrast graph of Figure 3 demonstrates a very clear pattern, although it is apparent that there is a certain amount of observer variability and differences between observers. Based on visual inspection of the graph in Figure 3, a curve fit was applied using a simple reciprocal model. The general form of the model equation was:

$$S = K + \frac{M}{E} \tag{2}$$

where:

S = Snellen acuity (20/xx)

K = constant (empirically determined by least squares fit)

M = proportionality constant (empirically determined)

E = equivalentillumination

Table 4 is a summary of the model fit (Equation 2) for both the high contrast and low contrast Landolt C. The model is shown in Figures 3 and 4 as a solid line. The model fits reasonably well for the high contrast condition (r = 0.981) and not too badly for the low contrast condition (r = 0.912) given that human observations are involved. It should be noted that this fit was done for a relatively small range of illuminations (0.58 to 5.0 times starlight) and

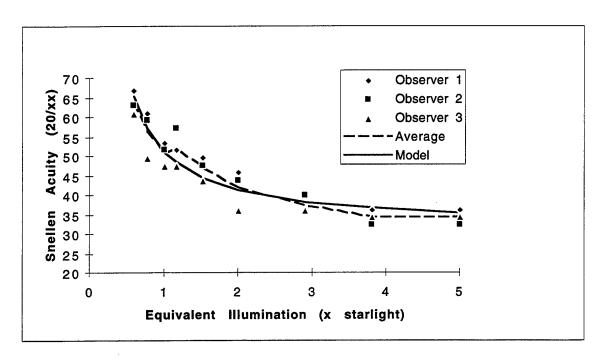


Figure 3. Plot of Snellen acuity as a function of starlight illumination for high contrast Landolt C stimuli (data from Table 2).

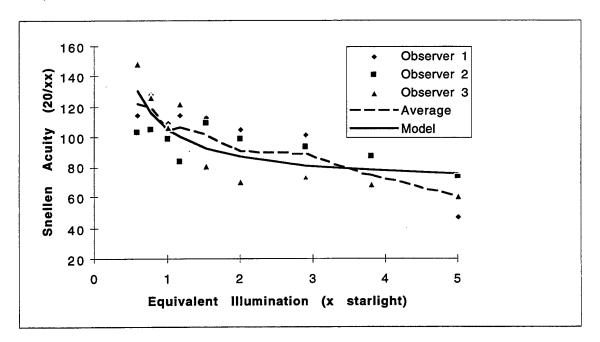


Figure 4. Plot of Snellen acuity as a function of starlight illumination for low contrast Landolt C stimuli (data from Table 3).

is therefore only valid for this range. It is possible the basic model (Equation 2) may still hold up for a greater range of illuminations but that has not yet been tested.

Table 4. Summary of model fit to data.

CONDITION	K	M	CORR (r)
70% CONTRAST	31.6	19.6	0.981
20% CONTRAST	70.0	35.3	0.912

The results shown in Figures 3 and 4 and the correlations in Table 4 support the validity of the hypothesis regarding using equivalent illumination and the T_{NVG} as a means of assessing the quality of aircraft transparencies with respect to NVGs. It is possible to use Equation 2 with the appropriate coefficients from Table 4 to reasonably predict the impact on visual acuity of a specific windscreen or canopy if its T_{NVG} value is known.

There is, however, an implicit assumption that must be addressed before applying the model presented herein. These results and the model presented assumes the transparency has a very low haze value 12. Haze is a phenomenon caused by light scattering from materials within the transparency or from micro-scratches on the surface of the transparency (usually due to repeated cleaning). The effect of haze is to lower the contrast of objects viewed through the transparency which, in turn, would reduce visual performance (Snellen acuity). The implicit assumption was that the transparencies employed in this study had very little or no haze. The two transparencies used in this study were measured 13 and were found to have fairly low values of haze; 1.7% for the medium transmission and 2.4% for the low transmission transparency samples. If haze is present, then the model needs to be modified to include the loss in visual acuity due to contrast reduction. If haze is not present, then the contrast of objects viewed through a transparency remains the same no matter what the transmission coefficient is; only the apparent luminance of the object is affected. Future work in this area will address the haze issue.

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BIOGRAPHIES

ALAN PINKUS has been an Air Force psychologist since 1982. As a human factors engineer, he has worked on major systems including Royal Saudi Air Force KE-3 tanker, Gunship 2, LANTIRN, Air Force One and Joint-Stars. As a researcher, he has worked in the areas of image display metrics, night vision goggles, apparent motion, aircraft lighting,

transparency analysis, vision from space, workload assessment and has lectured for NATO AGARD in Europe. Alan has a BS Degree (Wright State, 1974), an MA (University of Dayton, 1980) and a PhD (Miami University, 1992), all in Experimental Psychology. He holds seven patents (or pending) in the area of night vision goggle ancillary devices and has over 20 publications. He is a member of the Human Factors and Ergonomics Society (Southern Ohio Chapter), SAFE, Association of Aviation Psychologists and is active in the American Society for Testing and Materials Subcommittee F7.08 on Aerospace Transparencies.

H. LEE TASK has been employed as a research scientist for the US Air Force since 1971. He has served as chief scientist for the Armstrong Aerospace Medical Research Laboratory (prior to its reorganization and disestablishment in 1991) and is presently a senior scientist at the Visual Display Systems Branch of the Human Engineering Division, in the Armstrong Laboratory's Crew Systems Directorate, at Wright-Patterson AFB, Ohio. He is currently involved in research and development in the areas of helmetmounted displays, vision through night vision goggles, optical characteristics of aircraft windscreens, vision, and display systems. He has a BS Degree in Physics (Ohio University), MS degrees in Solid State Physics (Purdue, 1971), Optical Sciences (University of Arizona, 1978), and Management of Technology (MIT, 1985) and a PhD in Optical Sciences from the University of Arizona Optical Sciences Center (1978). During his career he has earned 36 patents and has published more than 75 journal articles, proceedings papers, technical reports, and other technical publications. He is a member of the Human Factors and Ergonomics Society (HFES), the American Society for Testing and Materials (where he is chairman of Subcommittee F7.08 on Aerospace Transparencies and is a Fellow of the Society), the Association of Aviation Psychologists, SAFE association, the Society for Information Display (SID), and SPIE (the optical engineering society). He has served as reviewer for papers in SAFE, SID, and HFES.

REVISED DRAFT (Dec 16, 97)

P94-02 Standard Test Method for Measuring the Night Vision Goggle-Weighted Transmissivity of Transparent Parts¹

INTRODUCTION

Test Methods D 1003-61 and F 1316-90 (see Refs. 2.1.1 and 2.1.2) apply to the transmissivity measurement of transparent materials, the former being for small flat samples and the later for larger, curved pieces such as aircraft transparencies. Additionally, in D 1003-61, the transmissivity is measured perpendicular to the surface of test sample and both test methods measure only in the visible light spectral region. Night vision goggles (NVGs) are being used in aircraft and other applications (e.g., marine navigation, driving) with increasing frequency. These devices amplify both visible and near-infrared (NIR) spectral energy. Overall visual performance can be degraded if the observer uses the NVGs while looking through a transparency that has poor transmissivity in the NIR region. This method describes both direct and analytical measurement techniques that determine the NVG-weighted transmissivity of transparent pieces including ones that are large, curved, or held at the installed position.

1. Scope

1.1 This test method describes apparatuses and procedures that are suitable for measuring the NVG-weighted transmissivity of transparent parts including those which are large, thick, curved, or already installed. This test method is sensitive to transparencies that vary in transmissivity as a function of wavelength.

1.2 Since the transmissivity (or transmission coefficient) is a ratio of two radiance values, it has no units. The units of radiance recorded in the intermediate steps of this test method are not critical; any recognized units of radiance (e.g., watts/m²-str) may be used, as long as it is consistent (see Ref. 2.2.1).

1.3 This standard does not purport to address the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

2.1.1 D 1003-61 Standard Test Method for Haze and Luminous Transmittance of Transparent Parts. *Annual Book of ASTM Standards*, Vol. 15.09. Sep 1961.

2.1.2 F 1316-90 Standard Test Method for Measuring the Transmissivity of Transparent Parts. *Annual Book of ASTM Standards*, Vol. 08.01. Mar 1991.

2.2 Published Documents:

¹ This test method is under the jurisdiction of ASTM Committee F-7 on Aerospace and Aircraft and is the direct responsibility of Subcommittee F07.08 on Transparent Enclosures and Materials.

2.2.1 RCA Electro-Optics Handbook. (1974). Lanchaster PA: RCAlSolid State Division|Electro Optics and Devices. Technical Series EOH-11.

2.2.2 Wyszecki, Gunter. and Stiles, W. S. (1982). Color Science: Concepts and Methods, Quantitative Data and Formulae (Second Edition). New York: John Wiley and Sons.

3. **Terminology**

3.1 Definitions:

3.1.1 Analytical test method - the test method that uses spectral transmissivity data of a transparent part collected by the use of either spectraphotometric or spectraradiometric instrumentation. The data are then examined using analytic methods to determine the

NVG-weighted transmissivity of the part.

3.1.2 Direct test method - the test method that uses the actual luminous output, as measured by a photometer, properly coupled to the eyepiece of the test NVG. The NVGweighted transmissivity of the part is then determined by forming the ratio of the NVG output luminance with the transparent part in place to the luminance output without the part.

3.1.3. NVG-weighted spectral transmissivity - the spectral transmissivity of a transparent part multiplied by the spectral sensitivity of a given NVG (see Fig. 1).

3.1.4 NVG-weighted transmissivity (T_{NVG}) - the spectral transmissivity of a transparent part multiplied by the spectral sensitivity of a given NVG integrated with respect to wavelength (see Fig. 1, Equations 1 and 2).

3.1.5 NVG spectral sensitivity - the sensitivity of an NVG as a function of input

wavelength.

3.1.6 photometer - a device that measures luminous intensity or brightness by converting (weighting) the radiant intensity of an object using the relative sensitivity of the human visual system as defined by the photopic curve. (see Refs. 2.2.1 and 2.2.2)

3.1.7 Photopic curve - the photopic curve is the spectral sensitivity of the human eye for daytime conditions as defined by the Commission Internationale d'Eclairage (CIE)

1931 standard observer (see Refs. 2.2.1 and 2.2.2).

3.1.8 transmission coefficient - same as transmissivity.

3.1.9 transmissivity - the transmissivity of a transparent medium is the ratio of the luminance of an object measured through the medium to the luminance of the same object measured directly.

Summary of Test Methods

4.1 General Test Conditions: The test can be performed in any light-controlled area (e.g., light-tight room, darkened hangar, or outside at night away from strong light sources). The ambient illumination must be very low due to the extreme sensitivity of the NVGs. A fixture holds the NVG and its objective lens is aimed at and focused on a target. The target can be either an evenly illuminated white, diffusely reflecting surface or a transilluminated screen (lightbox). The illumination is provided by a white, incandescent light source. Handle the samples carefully as to not cause any damage. Do not clean them with any solvents. Use part specific, prescribed cleaning materials and methods.

4.1.1 Direct Test Method: Attached directly to the eyepiece of the NVG is a photodetector. It has been found that the measured field of view (FOV) should be smaller than the uniformly illuminated portion of the target. The target illumination is adjusted so that the output of the NVGs is about 1.7 cd/m² (0.5 fL). This assures that the NVG input is not saturated; the automatic gain control (AGC) is not active. The luminance output of the NVG is measured and then repeated with the transparent material in place. The transmissivity is equal to the NVG output luminance with the transparent material in place divided by the NVG output luminance without the material (see Section 10.1, Equation 1). The result is the NVG-weighted transmissivity (T_{NVG}) of the transparent material.

4.1.2 Analytical test method: Without the sample in place, measure the light source's spectral energy distribution from 450 nanometers (nm) through 950 nm in 5 nm incremental steps. Place the sample into the spectrophotometer or spectraradiometer fixture. Perform spectral measurements, also from 450 nm through 950 nm in 5 nm incremental steps. Obtain, from the NVG manufacturer, the spectral sensitivity of the goggle that will be used in conjunction with the part. Perform analytic method as defined in Section 10.2 by Equation 2, to derive the T_{NVG} .

5. Significance and Use

- 5.1 Significance This test method provides a means to measure the compatibility of a given transparency through which NVGs are used at night to view outside, nighttime ambient illuminated natural scenes.
- 5.2 Use This test method may be used on any transparent part including sample coupons. It is primarily intended for use on large, curved, or thick parts that may already be installed (e.g., windscreens on aircraft).

6. Apparatus:

- 6.1 Test Environment This test method can be performed in any light-controlled area (e.g., light-tight room, darkened hangar, or outside at night away from strong light sources) since the NVGs are extremely sensitive to both visible and near infrared light. Extraneous light sources (e.g., exit signs, telephone pole lights, status indicator lights on equipment, etc.) can also interfere with the measurement.
- 6.2 White Diffuse Target The white target can be any uniformly diffusely reflecting or translucent material (e.g., cloth; flat white painted surface; plastic). The target area should be either smaller (see Figure 2) or larger (see Figure 3) than the NVG FOV (35-60 degrees typical) in order to minimize potential alignment errors.
- 6.3 Light Source The light source should be regulated to ensure that it does not change luminance during the reading period. It should be a low output, 2856 Kelvin incandescent light since this type emits sufficient energy in both visible and infrared without any sharp emission peaks or voids (see Ref. 2.2.1). Its output must be uniformly distributed over the measurement area of the white diffuse target. Use of neutral density filters or varying the lamp distance may be needed to achieve sufficiently low luminance levels to be obtained for test, since varying the radiator's output would shift its color temperature.
- 6.4 Night Vision Goggles A family of passive image intensifying devices that utilize visible and near-infrared light and enable the user to see objects that are illuminated by full moonlight through starlight only conditions. The goggle that is used for test should be the same as that which will be used with the given transparent material (see Appendix B).
- 6.5 *Photometer* Any calibrated photometer may be used for this measurement. However, the detector must be properly coupled to the NVG eyepiece and the FOV over which the light is integrated must be known (see Appendix A).

7. Test Specimen

7.1 If necessary, clean the part to be measured using the procedure prescribed for the specific material. Use of nonstandard cleaning methods can irrevocably damage the part. No special conditions other than cleaning are required.

8. Calibration and Standardization

8.1 It is not necessary that the photometer be calibrated in absolute luminance units since the measurement involves the division of two measured quantities yielding a dimensionless value. A generic photodector can be substituted for the photometer if its FOV is known.

9. Procedure

9.1 General Procedures: All measurements are performed in a darkened, light-controlled area. In order to control the effects of reflection, verify that there are no extraneous light sources that can produce reflections within the measurement area of the transparent material. To control the effects of haze, verify that no light other than the

measurement light, falls on the area being tested.

9.2 Direct test method: This method allows analysis of large or small transparent parts placed at either normal (perpendicular to the optical axis) or installed orientations, such as an aircraft windscreen. Figure 2 illustrates the use of a small, transilluminated lightbox. Figure 3 depicts the use of a large, front-illuminated, white, diffusely reflective target, illuminated as uniformly as possible using a regulated white incandescent light source. The size of the target is dependent upon the test location, the obtainable luminance uniformity, and the FOV of the photodetector assembly. In the field, a transilluminated lightbox is probably the easiest to setup and use as it offers the advantage of compact, selfcontained portability. It is important to maintain the same target to NVG distance during the measurements. In a light-tight room, a white, diffusely reflecting, front-illuminated surface may be utilized. In the field, the NVG can be held by hand and under laboratory conditions, can be mounted in a sturdy fixture. It is then aimed at and focused on the white target. The photodetector is attached to the NVG eyepiece. With the transparent material removed from the measurement path, the variable white light is adjusted to produce an NVG output luminance of about 1.7 cd/m² (0.5 fL). This insures that the NVG's input is not saturated; the AGC is not activated. Due to the extreme sensitivity of NVGs, neutral density filters may need to be placed in front of the light source in order to obtain low enough target luminance. After recording the NVG's output luminance, the transparent material is placed in the measurement path. If the material is a sample, its orientation relative to the measurement path can be simply perpendicular or at the installed angle. If an aircraft transparency is being tested, the NVG should be located at the design eye position relative to the transparency which is mounted in its installed position. Measuring at the installed angle is critical since many materials exhibit variations in transmissivity as a function of angle. The NVG's output, with the test piece in place, is then recorded. In order to prevent damage to the NVGs, verify that they are turned off before the test area lights are turned on.

There are numerous classes of NVGs (generations 2, 3; types A, B) that vary in their spectral sensitivity, intensified FOV, resolution, etc. It is important to select the proper NVG type that will be used in a given application. The NVG must also be in good

working condition and meet minimum user performance specifications.

The target illumination source can be an incandescent operating at 2856 Kelvin which is the standard color temperature that is used for many NVG test procedures. The illumination from this source can be varied using neutral density filters since varying the light's voltage would cause a corresponding color temperature shift. If the NVG is to be used to view an area, through a specific transparent material, that is illuminated by a different kind of light source (e.g., mercury vapor; sodium) then that source must be properly noted in the test report.

The luminance output of the NVG is measured and then repeated with the transparent material in place. The transmissivity is equal to the NVG output luminance with the transparent material in place divided by the NVG output luminance without the material (see Section 10.1, Equation 1). The result is the NVG-weighted transmissivity

 (T_{NVG}) of the transparent material.

9.3 Analytical test method: If using a spectrophotometer, the sample is usually limited to about two by two inch sample coupons held in a normal position. In general (but depending on the model) a spectraradiometer can be used to measure large or small parts at normal or installed positions. With the sample removed, measure the light source's spectral energy distribution from 450 nanometers (nm) through 950 nm in 5 nm incremental steps. Place the sample into the spectrophotometer or spectraradiometer

fixture. Perform spectral measurements, also from 450 nm through 950 nm in 5 nm incremental steps. Obtain, from the NVG manufacturer, the spectral sensitivity of the goggle type (in 5 nm increments) that will be used in conjunction with the transparent part. Perform analytic method as defined in Section 10.2 by Equation 2, to derive the T_{NVG} .

10. T_{NVG} Calculation
10.1 Direct test method calculation: When using a photodetector attached to the NVG eyepiece, the calculation is described by Equation 1. The transmissivity is equal to the NVG output luminance with the transparent material in place (L_T) divided by the NVG output luminance without the material (L_R) . The result is the NVG-weighted transmissivity (T_{NVG}) of the transparent material.

$$T_{NVG} = \frac{L_T}{L_R} \tag{1}$$

where:

 T_{NVG} = NVG-weighted transmissivity

= NVG output luminance with the transparent material in place

= NVG output luminance without the transparent material

10.2 Analytical test method: Figure 1 is an example of the elements of the T_{NVG} calculation. When substituting a spectraradiometer (see Appendix A) for the NVG and photodetector assemblies (see Figures 2 and 3), the calculation is described by Equation 2. For Equation 2, T_{NVG} equals the integral with respect to wavelength, of the transparent part's spectral transmissivity $[P(\lambda)]$ times the spectral energy distribution of the light source $[S(\lambda)]$ times the NVG spectral sensitivity $[G(\lambda)]$ divided by the integral with respect to wavelength, of the spectral energy distribution of the light source times the NVG spectral sensitivity.

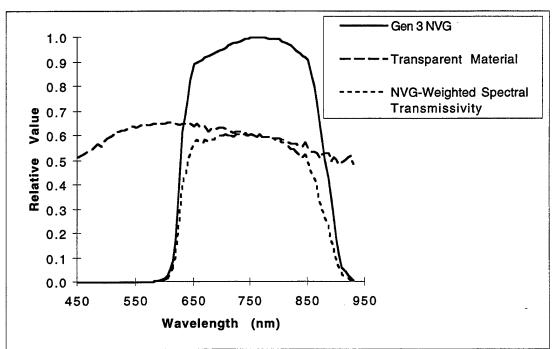


Figure 1. An example of how the spectral sensitivity of a Generation 3 NVG multiplied by the spectral transmissivity of a transparent part equals the NVG-weighted spectral transmissivity of that part. Integrating the curve with respect to wavelength yields the part's NVG-weighted transmissivity (T_{NVG}) value.

$$T_{NVG} = \frac{\int\limits_{450}^{950} P(\lambda)S(\lambda)G(\lambda)d\lambda}{\int\limits_{450}^{950} S(\lambda)G(\lambda)d\lambda}$$
(2)

where:

 T_{NVG} = NVG-weighted transmissivity

 $P(\lambda)$ = spectral energy distribution of the light source $G(\lambda)$ = spectral sensitivity of night vision goggle

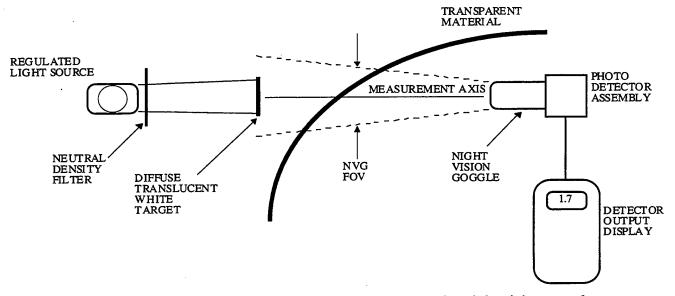


Figure 2. Direct test method equipment setup to measure the night vision goggle-weighted transmissivity of a transparent part using a transilluminated lightbox that underfills the NVG FOV.

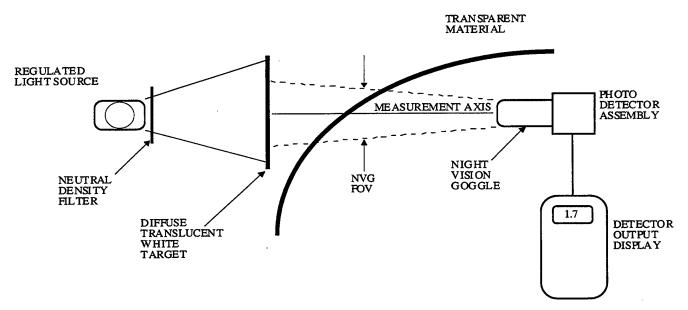


Figure 3. Direct test method equipment setup to measure the night vision goggle-weighted transmissivity of a transparent part using a transilluminated lightbox that overfills the NVG FOV.

11. Precision and Bias

11.1 An interlaboratory study (ASTM RR XXXX) was conducted to determine the precision of ASTM P94-02, Standard Test Method for Measuring Night Vision Goggle-Weighted Transmissivity of Transparent Materials. Six labs (instruments) were used to measure four plastic samples, five times each. The statistical summaries are shown in Tables 1 and 2.

Table 1. Repeatability (S_r) and reproducibility (S_R) values in T_{NVG} , derived from the data sets in Appendix C.

	REPEATABILITY (S,) WITHIN LABS	REPRODUCIBILITY (S_R) BETWEEN LABS
SAMPLE #1	0.011	0.015
SAMPLE #2	0.011	0.016
SAMPLE #3	0.007	0.011
SAMPLE #4	0.006	0.008
MEAN	0.009	0.013

Table 2. 95% repeatability (r) limits and 95% reproducibility (R) limits in T_{NVG} .

	95% r LIMITS WITHIN LABS	95% R LIMITS BETWEEN LABS
SAMPLE #1	0.030	0.043
SAMPLE #2	0.030	0.044
SAMPLE #3	0.021	0.030
SAMPLE #4	0.017	0.023
MEAN	0.025	0.035

 S_{\star} ranged from 0.006 to 0.011 T_{NVG} S_p ranged from 0.008 to 0.016 T_{NVG}

r ranged from 0.017 to 0.030 T_{NVG}

R ranged from 0.023 to 0.044 T_{NVG} 11.1.1 Since the accuracy of the measurements should not and did not depend upon the type of the transparent material, it is logical to calculate a mean T_{NVG} of the 4 sample sizes to derive the composite precision values indicative of this method. In summary, the statistical analysis (ASTM Standard Practices E 691 and E 177) revealed that the method's mean repeatability (S_r) was 0.009 T_{NVG} and the mean reproducibility (S_R) was 0.013 T_{NVG} . The mean 95% limits for repeatability (r) was 0.025 T_{NVG} and the mean 95% limits for reproducibility (R) was $0.035 T_{NVG}$.

11.1.2 The 95% limits were calculated using the formulae, below. Since the 95% limits are based on the difference between two test results, the $\sqrt{2}$ factor was incorporated into the calculation (ASTM Practice E 177; 27.3.3). For r = 95% repeatability limit (within laboratories) and S_r = repeatability standard deviation.

$$r = 1.960*\sqrt{2}*S_r$$

For R = 95% reproducibility limit (between laboratories) and $S_R =$ reproducibility standard deviation.

$$R = 1.960*\sqrt{2}*S_R$$

11.2 The procedure in this test method has no bias because the NVG-weighted transmissivity is defined only in terms of the test method.

12. Appendix A

12.1 Major suppliers of photometers:

International Light Inc., Newburyport MA

Labsphere, North Sutton NH

Minolta Corp.

Photo Research, Chatsworth CA

12.2 Major photometric light source manufacturers:

Acton Research Corp., Acton MA

DBA Systems Inc., Melbourne FL

Electro Optical Industries Inc., Santa Barbara CA

Graseby Infrared, Orlando FL

Hoffman Engineering Corp., Stamford CT

Labsphere Inc., North Sutton NH

Optronic Laboratories Inc., Orlando FL.

Oriel Corp., Strattford CT

Pyrometrics Corp., Millington NJ.

12.3 Major manufacturers of night vision goggles:

ITT, Roanoke VA

Litton, Phoenix AZ

APPENDIX C. Data reports: spectral transmissivity as a function of wavelength, 450 nm through 950 nm in 5 nm increments.

Rep. 1 Rep. 2 I (trans.) (trans.) (trans.) (t (trans.) (trans.) (t (0.870 0.869 0.869 0.873 0.870 0.872 0.873 0.876 0.876 0.874 0.876 0.876 0.885 0.876 0.876 0.885 0.876 0.876 0.885 0.878 0.876 0.885 0.876 0.876 0.885 0.878 0.878 0.885 0.878 0.878 0.885 0.878 0.878 0.885 0.878 0.881 0.887 0.887 0.887 0.887 0.888 0.879 0.888 0.884 0.884 0.890 0.886 0.886 0.890 0.886 0.886 0.890 0.886 0.886 0.890 0.886 0.886 0.890 0.886 0.886	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	ASTRONG LAB (HE	(CV)
Rep. 1 Rep. 2 I (trans.)			
(trans.) (trans.) (trans.) (trans.) (trans.) (trans.) (trans.) (trans.) 0.870 0.861 0.867 0.878 0.872 0.872 0.872 0.875 0.887 0.887 0.875 0.887 0.888 0.887 0.887 0.887 0.888 0.887 0.887 0.888 0.887 0.887 0.888 0.887 0.887 0.888 0.887 0.887 0.888 0.887 0.887 0.888 0.887 0.888 0.887 0.887 0.887 0.888 0.887 0.887 0.888 0.887 0.887 0.887 0.888 0.887	2	Rep. 4	Rep. 5
0.870 0.869 0.871 0.861 0.878 0.867 0.872 0.870 0.873 0.876 0.884 0.876 0.885 0.876 0.887 0.876 0.887 0.876 0.887 0.876 0.887 0.876 0.887 0.878 0.887 0.878 0.887 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.879 0.887 0.889 0.888 0.889 0.889 0.889 0.890 0.886 0.890 0.886 0.890 0.886 0.891 0.886 0.892 0.886	(trans.) (trans.)	(trans.)	(trans.)
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0.868 0.867 0.878 0.860 0.873 0.872 0.874 0.876 0.875 0.876 0.883 0.876 0.884 0.876 0.885 0.876 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.885 0.878 0.885 0.878 0.887 0.878 0.885 0.878 0.886 0.878 0.887 0.888 0.887 0.888 0.887 0.889 0.889 0.889 0.889 0.889 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886	0.861 0.877	0.877	0.824
0.880 0.860 0.880 0.872 0.873 0.876 0.872 0.876 0.883 0.876 0.883 0.876 0.884 0.876 0.885 0.876 0.886 0.876 0.887 0.876 0.887 0.878 0.887 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.884 0.889 0.884 0.888 0.884 0.888 0.884 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886	0.867 0.882	0.880	0.828
0.880 0.872 0.873 0.870 0.872 0.876 0.872 0.876 0.883 0.876 0.884 0.876 0.885 0.876 0.886 0.878 0.876 0.878 0.887 0.878 0.887 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.887 0.887 0.887 0.887 0.888 0.887 0.878 0.888 0.878 0.889 0.888 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886	0.860 0.889	988.0	0.840
0.873 0.870 0.886 0.867 0.883 0.876 0.883 0.876 0.884 0.876 0.885 0.879 0.887 0.878 0.887 0.878 0.887 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.878 0.886 0.878 0.887 0.889 0.887 0.889 0.889 0.878 0.889 0.878 0.889 0.878 0.889 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886	0.872 0.884	0.886	0.826
0.886 0.867 0.872 0.876 0.883 0.876 0.884 0.876 0.880 0.877 0.880 0.878 0.885 0.878 0.878 0.878 0.887 0.878 0.885 0.878 0.886 0.878 0.887 0.878 0.885 0.878 0.886 0.878 0.887 0.880 0.887 0.889 0.887 0.889 0.887 0.888 0.889 0.878 0.889 0.878 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886	0.870 0.884	0.884	0.835
0.872 0.876 0.883 0.876 0.884 0.876 0.880 0.876 0.880 0.878 0.885 0.878 0.878 0.876 0.879 0.876 0.887 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.880 0.887 0.881 0.887 0.882 0.887 0.888 0.889 0.879 0.889 0.879 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886	0.867 0.883	0.881	0.827
0.883 0.876 0.875 0.875 0.884 0.876 0.880 0.879 0.885 0.876 0.878 0.876 0.878 0.876 0.887 0.876 0.887 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.880 0.887 0.881 0.887 0.881 0.887 0.882 0.889 0.879 0.889 0.884 0.888 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886	0.876 0.879	0.883	0.826
0.875 0.875 0.884 0.876 0.880 0.877 0.880 0.878 0.878 0.876 0.878 0.876 0.881 0.879 0.882 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.878 0.887 0.881 0.889 0.873 0.889 0.884 0.888 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886 0.891 0.886 0.892 0.886	0.876 0.890	0.886	0.829
0.884 0.876 0.880 0.877 0.880 0.878 0.885 0.876 0.879 0.876 0.881 0.879 0.885 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.881 0.887 0.881 0.887 0.882 0.889 0.884 0.888 0.884 0.888 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886	0.875 0.886	0.880	0.830
0.880 0.877 0.885 0.878 0.878 0.878 0.878 0.876 0.885 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.878 0.887 0.878 0.887 0.881 0.887 0.881 0.887 0.881 0.887 0.884 0.888 0.884 0.888 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886		0.886	0.832
0.880 0.879 0.879 0.876 0.879 0.876 0.878 0.881 0.881 0.879 0.885 0.878 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.881 0.887 0.882 0.887 0.883 0.888 0.873 0.888 0.883 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884		0.891	0.833
0.885 0.878 0.879 0.876 0.881 0.879 0.881 0.879 0.885 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.880 0.887 0.881 0.887 0.882 0.887 0.883 0.888 0.873 0.888 0.884 0.888 0.883 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884	0.879 0.882	0.891	0.823
0.879 0.876 0.878 0.881 0.881 0.879 0.887 0.878 0.885 0.878 0.885 0.878 0.886 0.878 0.887 0.880 0.887 0.881 0.887 0.881 0.887 0.881 0.887 0.882 0.889 0.879 0.888 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886	0.878 0.886	0.889	0.829
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0.881 0.879 0.887 0.876 0.885 0.878 0.886 0.878 0.885 0.877 0.884 0.881 0.887 0.881 0.887 0.881 0.887 0.884 0.888 0.878 0.889 0.884 0.888 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886	0.881 0.890	0.890	0.839
0.887 0.876 0.885 0.878 0.886 0.878 0.885 0.878 0.885 0.878 0.886 0.877 0.887 0.881 0.887 0.881 0.889 0.878 0.889 0.878 0.888 0.884 0.889 0.884 0.890 0.886 0.890 0.886 0.891 0.886 0.892 0.886 0.893 0.886 0.891 0.886 0.892 0.886 0.893 0.886		0.892	0.831
0.885 0.878 0.886 0.878 0.885 0.878 0.885 0.878 0.884 0.880 0.887 0.878 0.889 0.878 0.889 0.879 0.889 0.884 0.890 0.884 0.890 0.886 0.891 0.886 0.890 0.886 0.891 0.886 0.892 0.886 0.893 0.886 0.891 0.886 0.892 0.886 0.893 0.886		0.889	0.831
0.886 0.879 0.885 0.878 0.886 0.877 0.887 0.881 0.887 0.881 0.887 0.879 0.888 0.879 0.888 0.884 0.890 0.883 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886	0.878 0.891	0.888	0.829
0.885 0.878 0.886 0.877 0.884 0.880 0.887 0.881 0.887 0.881 0.889 0.879 0.888 0.884 0.890 0.883 0.890 0.884 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886		0.895	0.827
0.885 0.878 0.886 0.877 0.884 0.880 0.887 0.881 0.887 0.879 0.888 0.884 0.888 0.883 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886 0.890 0.886		0.890	0.816
0.886 0.877 0.884 0.880 0.887 0.881 0.887 0.878 0.889 0.879 0.888 0.884 0.888 0.883 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.884 0.890 0.886 0.890 0.886 0.891 0.886 0.890 0.886		0.894	0.818
0.884 0.880 0.887 0.881 0.887 0.878 0.889 0.879 0.888 0.884 0.890 0.886 0.891 0.886 0.892 0.886 0.893 0.886 0.890 0.886 0.891 0.885		0.891	0.827
0.887 0.881 0.887 0.878 0.889 0.879 0.888 0.884 0.890 0.886 0.890 0.886 0.891 0.885 0.891 0.885 0.891 0.885		0.892	0.822
0.887 0.878 0.889 0.879 0.888 0.884 0.890 0.884 0.890 0.886 0.891 0.885 0.891 0.885 0.890 0.885	0.881 0.893	0.894	0.822
0.889 0.879 0.888 0.884 0.888 0.884 0.890 0.884 0.890 0.886 0.891 0.885 0.890 0.885	0.878 0.892	0.894	0.816
0.888 0.884 0.890 0.884 0.890 0.886 0.891 0.886 0.892 0.886		0.895	0.822
0.888 0.883 0.890 0.884 0.890 0.886 0.891 0.885 0.890 0.885		0.893	0.819
0.890 0.884 0.890 0.886 0.891 0.885 0.890 0.884	0.883 0.892	0.896	0.826
0.890 0.886 0.891 0.885 0.890 0.884	0.884 0.893	0.896	0.823
0.891 0.885 0.890 0.884		0.895	0.824
0.890 0.884		0.893	0.830
		0.895	0.835
	0.885 0.898	0.900	0.831

Ă	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	SPECTRARADIO	OMETER - ARM	STRONG LAB	(HECV)
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
920	0.895	0.886	968'0	0.901	0.838
625	0.890	0.890	0.900	0.899	0.834
930	0.895	0.888	0.901	668'0	0.835
635	0.895	0.889	0.904	0.900	0.830
640	0.897	0.893	0.905	0.902	0.838
645	0.898	0.892	0.904	0.903	0.842
920	0.899	0.895	906.0	0.906	0.843
922	0.900	0.895	0.903	0.906	0.847
099	0.899	0.895	0.908	0.908	0.856
599	968:0	968.0	0.905	0.909	0.859
029	0.900	0.891	006'0	0.904	0.856
675	0.902	0.894	0.910	0.901	0.865
089	0.902	0.892	0.902	0.902	0.864
985	0.903	968'0	0.903	0.904	0.862
069	0.895	0.897	0.910	0.901	0.868
969	0.903	0.895	0.905	0.913	198.0
700	0.901	0.899	0.907	0.907	0.875
705	0.905	0.899	0.905	0.908	0.875
710	0.903	0.895	0.905	0.910	0.877
715	0.899	0.899	0.904	0.907	0.883
720	0.897	0.892	0.902	0.901	0.882
725	0.896	0.885	0.897	0.903	0.875
730	0.894	0.888	0.894	0.897	0.879
735	0.892	0.889	0.897	0.898	0.875
740	0.898	0.892	968.0	0.903	0.878
745	0.903	0.892	0.904	0.904	0.879
750	0.901	968.0	0.905	0.906	0.885
755	0.903	0.897	0.910	0.907	0.883
092	906'0	0.897	0.908	0.907	0.878
765	0.904	0.900	0.908	0.911	0.885
770	0.905	0.896	0.907	0.908	0.894
775	0.904	0.897	0.904	0.910	0.894
780	0.907	0.000	0.905	906.0	0.889
785	0.899	0.897	906:0	0.910	0.891

dranalanan			SAMPLE 1		
Manalanath			Distract Ages &		
wavelengin	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
06 <i>L</i>	0.903	0.898	206.0	0.909	0.882
795	0.903	0.896	0.904	0.904	0.881
800	0.904	0.893	0.899	0.905	0.894
805	0.901	0.897	0.907	0.904	0.886
810	0.904	0.891	0.903	0.900	0.900
815	0.904	0.895	0.903	0.909	0.896
820	0.908	0.895	0.905	0.908	0.895
825	0.905	0.899	0.903	0.910	0.898
830	0.902	0.897	0.905	0.909	0.903
835	0.902	0.902	0.898	0.904	0.900
840	0.899	868.0	0.903	0.899	0.906
845	0.899	0.890	0.902	906:0	0.894
820	0.897	0.887	968.0	0.902	0.885
855	0.886	0.882	0.891	0.895	0.888
098	0.888	0.877	0.882	0.888	0.888
865	0.871	0.863	0.875	0.876	0.870
870	0.859	0.856	0.866	0.873	0.879
875	0.852	0.838	0.849	0.853	0.878
880	0.823	0.812	0.826	0.826	0.882
885	0.797	0.787	0.798	0.805	0.875
890	0.785	0.772	0.792	0.784	0.882
895	0.776	0.775	0.783	0.782	0.878
006	0.793	0.788	0.790	0.803	0.871
905	0.815	0.804	0.808	0.809	0.873
910	0.832	0.835	0.834	0.845	0.865
915	0.852	0.841	0.853	0.871	0.883
920	0.869	0.865	0.882	0.881	0.886
925	0.869	0.879	0.889	0.885	0.882
930	0.879	0.885	0.879	0.883	0.890
935	0.890	0.881	906'0	0.887	0.868
940	0.880	0.885	0.893	0.912	0.898
945	0.867	0.892	0.902	0.903	0.894
950	0.872	0.879	0.892	068'0	0.845

	CARY 5G SPE	CTRAPHOTOM	ETER - BROOKS	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(nm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	988'0	0.885	0.883	0.885	0.884
455		0.887	0.885	0.887	0.887
460	068'0	0.888	0.887	0.888	0.889
465	0.891	0.889	0.888	0.890	0.890
470		0.891	0.889	0.892	0.891
475	0.894	0.892	0.890	0.894	0.893
480	0.894	0.892	0.892	0.895	0.894
485	968.0	0.895	0.892	0.895	0.895
490	968.0	0.895	0.893	968.0	0.895
495		0.895	0.894	968.0	0.896
200	0.897	968'0	0.894	968'0	0.896
505	0.898	0.897	0.894	0.898	0.896
510		0.898	0.896	0.899	0.897
515		0.897	0.897	0.900	0.898
520			0.897	0.899	0.898
525			968.0	0.900	0.898
530			0.897	0.900	0.899
535			968.0	0.899	0.899
540			0.897	0.900	0.898
545			968.0	0.899	0.899
550	0.901	668.0	0.897	0.900	0.899
555		0.899	0.897	0.000	0.899
260			868.0	0.902	0.900
565			868.0	0.901	0.901
570			868.0	0.901	0.900
575	0.903		0.899	0.902	0.901
580	0.904		868'0	0.902	0.901
585	0.903	0.901	0.900	0.905	0.902
590	0.902	0.902	0.900	0.903	0.902
595	0.904	0.902	0.899	0.903	0.902
009	0.904	0.903	0.901	0.004	0.904
605		0.904	0.901	0.905	0.903
610	0.906		0.905	0.905	0.904
615		0.904	0.902	906.0	906.0

	CARY 5G SPE	CTRAPHOTOM	ETER - BROOK	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.907	0.906	0.903	0.007	0.906
625	206'0	0.907	0.903	0.907	0.907
630	606'0	0.908	0.904	0.908	0.908
635	0.910	0.908	506:0	0.910	0.909
640	0.910	0.910	0.907	0.911	0.911
645	0.912	0.911	0.908	0.913	0.911
929	0.913	0.912	0.908	0.912	0.912
929	0.913	0.912	0.910	0.914	0.912
099	0.913	0.913	0.910	0.913	0.912
599	0.913	0.913	0.910	0.913	0.913
029	0.915	0.913	806.0	0.915	0.912
675	0.915	0.913	0.911	0.914	0.914
089	0.916	0.914	0.910	0.915	0.914
685		0.914	0.911	0.915	0.914
069		0.914	0.911	0.915	0.914
969	0.915	0.914		0.915	0.915
700	0.915	0.913	0.909	0.914	0.915
705	0.915	0.913	0.909	0.914	0.913
710	0.912	0.912	0.606	0.913	0.912
715	0.912	0.910	206.0	0.911	0.911
720	806'0	0.906	0.904	0.909	0.907
725		0.903	0.900	0.905	0.903
730		0.901	968.0	0.901	0.902
735		0.901	0.897	0.905	0.901
740		0.901	0.899	0.903	0.902
745	0.907	0.905	0.903	0.908	0.906
750	0.909	0.908		0.910	0.909
755	0.911	0.910		0.912	0.909
160	0.911	0.910	806.0	0.912	0.913
765	0.913	0.912	0.909	0.914	0.912
770	0.912	0.911	0.907	0.912	0.911
775	0.911	0.909	0.907	0.911	0.909
780	0.910	0.911	906:0	0.911	0.910
785	0.911	0.910	906.0	0.911	0.908

	CARY 5G SPEC	TRAPHOTOM	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	AFB (AL/OEO)	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
190	0.910	0.908	0.904	0.909	0.909
795	0.908	0.908	0.903	0.908	0.909
800	0.909	0.907	0.902	0.907	0.906
805	0.908	0.906	0.903	0.908	0.907
810	0.909	0.905	0.904	0.908	0.907
815	0.908	0.908	0.904	0.909	0.906
820	0.908	0.911	0.906	0.911	0.907
825	606'0	0.910	0.902	0.911	0.910
830	0.910	0.910	0.905	0.912	0.908
835	0.908	0.907	0.904	0.910	0.908
840	0.906	906:0	0.904	0.908	0.906
845	0.905	906.0	0.902	0.907	906.0
850	0.904	006'0	0.899	0.903	0.898
855	0.899	0.903	0.897	968.0	0.899
098	0.885	0.890	0.885	0.892	0.887
865	0.883	0.883	0.880	0.883	0.877
870	0.878	0.866	0.865	0.873	0.881
875	0.854	0.854	0.852	0.851	0.853
880	0.837	0.835	0.833	0.835	0.836
885	0.811	0.810	0.808	0.811	0.812
890	0.788	0.787	0.786	0.786	0.787
895	0.775	0.775	0.772	0.775	0.776
006	0.777	0.775	0.772	0.776	0.776
905	0.792	0.791	0.789	0.791	0.791
910	0.815	0.813	0.813	0.814	0.815
915		0.839	0.836	0.840	0.840
920		0.860	0.859	0.861	0.861
925	928.0 .	0.875	0.873	0.874	0.875
930		0.884	0.883	0.882	0.883
935	0.891	0.890	0.889	0.889	0.890
940		0.894	0.893	0.893	0.893
945		0.896	0.893	0.895	0.895
950	0.894	0.892	0.892	0.892	0.891

P	ERKIN ELMER	LAMBDA 9 - BR	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	(OEO)	
		SA	SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.877	0.873	0.871	0.872	0.867
455	0.878	0.875	0.872	0.873	0.869
460	0.880	0.877	0.874	0.875	0.870
465	0.881	0.878	0.875	0.876	0.872
470	0.882	0.879	0.876	0.877	0.873
475	0.884	0.880	0.878	0.878	0.874
480	0.885	0.881	0.878	0.880	0.875
485	988.0	0.882	0.880	0.880	0.876
490	988.0	0.883	0.880	0.881	0.877
495	0.887	0.884	0.881	0.882	0.877
200	0.888	0.885	0.882	0.883	0.878
505	0.888	0.885	0.882	0.883	0.878
510	0.889	0.886	0.883	0.884	0.879
515	0.890	0.886	0.883	0.884	0.879
520	0.890	0.886	0.883	0.884	0.879
525	0.890	0.887	0.884	0.885	0.880
530	0.890	0.887	0.884	0.885	0.880
535	0.890	0.887	0.884	0.885	0.880
540	0.890	0.887	0.884	0.885	0.880
545	0.891	0.888	0.885	0.886	0.881
550	0.891	0.888	0.885	0.886	0.881
555	0.891	0.888	0.885	0.886	0.882
260	0.892	0.889	0.886	0.886	0.882
265	0.892	0.889	0.886	0.887	0.883
270	0.893	0.890	0.887	0.888	0.883
575	0.893	0.890	0.887	0.888	0.884
280	0.894	0.891	0.888	0.889	0.885
585	0.894	0.891	0.889	0.889	0.885
290	0.895	0.892	0.888	0.890	0.885
595	0.895	0.892	0.889	0.890	0.886
009	0.896	0.893	0.890	0.891	0.887
905	0.897	0.894	0.891	0.891	0.887
610	0.897	0.894	0.892	0.892	0.888
615	0.898	0.895	0.892	0.893	0.889

P	ERKIN ELME	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	OOKS, AFB (AI	/OEO)	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.899	968'0	0.893	0.894	0.890
625	0.899	0.897	0.894	0.894	0.891
630	006:0	868.0	968.0	968.0	0.892
635	0.901	0.899	0.897	0.897	0.894
640	0.903	0.901	0.898	0.899	0.895
645	0.904	0.902	0.899	0.900	968'0
650	906'0	0.903	0.900	0.901	0.897
655	906.0	0.903	0.901	0.901	0.897
099	906'0	0.904	0.901	0.902	0.898
599	0.907	0.904	0.902	0.902	868.0
0.09	0.907	0.904	0.902	0.902	0.899
675	0.907	0.905	0.903	0.903	0.899
089	0.907	906.0	0.903	0.903	0.900
589	806.0	0.906	0.903	0.904	0.900
069	0.908	906.0	0.903	0.904	0.901
695	0.909	906.0	0.904	0.904	0.901
200	0.908	0.906	0.903	0.904	0.901
705	0.907	906.0	0.903	0.903	0.900
710	0.906	0.904	0.905	0.905	0.899
715	0.905	0.905	0.900	0.901	0.897
720	0.903	0.899	0.897	0.898	0.894
725	0.899	0.896	0.894	0.894	0.891
730	968:0	0.894	0.892	0.892	0.889
735	0.896	0.894	0.892	0.892	0.889
740	0.897	968.0	0.893	0.895	0.891
745	0.902	0.900	0.897	0.898	0.894
750	0.904	0.902	0.900	0.901	0.897
755	0.907	0.904	0.902	0.903	0.900
160	0.907	906:0	0.903	0.905	0.901
765	0.908	0.907	0.904	0.905	0.901
770	0.908	906.0	0.903	0.904	0.901
775	0.907	906:0	0.903	0.904	0.901
780	0.907	0.905	0.903	0.903	0.900
785	906'0	0.904	0.902	0.902	0.899

Rep. 4 (trans.) (0.901 (0.901 (0.901 (0.901 (0.902		PERKIN ELMER	LAMBDA 9 - 1	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	L/OEO)	
Rep. 1 Rep. 2 Rep. 3 Rep. 4 (trans.) (trans.) (trans.) (trans.) 0.904 0.903 0.901 0.901 0.904 0.902 0.900 0.901 0.903 0.902 0.900 0.900 0.903 0.902 0.900 0.900 0.904 0.902 0.901 0.902 0.904 0.902 0.901 0.902 0.905 0.903 0.902 0.903 0.905 0.904 0.902 0.903 0.905 0.907 0.904 0.902 0.903 0.905 0.907 0.904 0.903 0.905 0.905 0.904 0.905 0.906 0.905 0.905 0.904 0.905 0.906 0.905 0.905 0.904 0.905 0.906 0.905 0.905 0.904 0.905 0.906 0.905 0.905 0.804 0.805 0.803 0				SAMPLE 1	-	
(trans.) (trans.) (trans.) (trans.) 0.904 0.903 0.901 0.901 0.904 0.902 0.900 0.901 0.903 0.902 0.900 0.900 0.904 0.902 0.900 0.900 0.903 0.902 0.901 0.902 0.904 0.902 0.903 0.902 0.904 0.903 0.903 0.903 0.905 0.904 0.903 0.903 0.904 0.904 0.908 0.905 0.904 0.904 0.908 0.905 0.904 0.908 0.905 0.904 0.908 0.905 0.904 0.908 0.905 0.904 0.908 0.905 0.804 0.908 0.905 0.804 0.804 0.804 0.805 0.805 0.905 0.806 0.808 0.905 0.807 0.808 0.803 <t< th=""><th>wavelength</th><th>Rep. 1</th><th></th><th>Rep. 3</th><th>Rep. 4</th><th>Rep. 5</th></t<>	wavelength	Rep. 1		Rep. 3	Rep. 4	Rep. 5
0.904 0.903 0.901 0.904 0.902 0.900 0.903 0.902 0.900 0.904 0.902 0.900 0.903 0.902 0.900 0.904 0.902 0.901 0.905 0.903 0.902 0.907 0.905 0.903 0.904 0.904 0.908 0.904 0.904 0.908 0.904 0.904 0.908 0.904 0.904 0.908 0.904 0.904 0.908 0.904 0.908 0.908 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 <td< td=""><td>(mu)</td><td>(trans.)</td><td>(trans.)</td><td>(trans.)</td><td>(trans.)</td><td>(trans.)</td></td<>	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.904 0.902 0.900 0.903 0.902 0.899 0.904 0.902 0.900 0.903 0.902 0.901 0.904 0.902 0.901 0.905 0.903 0.902 0.905 0.905 0.903 0.907 0.906 0.903 0.904 0.904 0.908 0.904 0.904 0.908 0.904 0.908 0.908 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 0.809 <td< td=""><td>790</td><td>0.904</td><td>0.903</td><td>0.901</td><td>0.901</td><td>0.898</td></td<>	790	0.904	0.903	0.901	0.901	0.898
0.903 0.902 0.899 0.904 0.902 0.900 0.903 0.902 0.900 0.904 0.902 0.901 0.905 0.903 0.901 0.905 0.903 0.902 0.905 0.906 0.903 0.907 0.906 0.908 0.904 0.906 0.908 0.904 0.906 0.908 0.907 0.906 0.908 0.907 0.906 0.908 0.807 0.809 0.903 0.808 0.885 0.883 0.806 0.885 0.883 0.807 0.885 0.883 0.808 0.809 0.746 0.809 0.774 0.746 0.809 0.774 0.751 0.809 0.804 0.804 0.809 0.804 0.804 0.809 0.809 0.865 0.901 0.809 0.865 <td< td=""><td>795</td><td>0.904</td><td>0.902</td><td>0.900</td><td>0.901</td><td>0.897</td></td<>	795	0.904	0.902	0.900	0.901	0.897
0.904 0.902 0.900 0.903 0.902 0.901 0.904 0.902 0.901 0.905 0.903 0.902 0.905 0.903 0.903 0.907 0.905 0.903 0.907 0.906 0.906 0.907 0.906 0.908 0.904 0.906 0.908 0.904 0.906 0.908 0.907 0.906 0.908 0.807 0.809 0.903 0.808 0.885 0.883 0.884 0.885 0.883 0.887 0.883 0.883 0.894 0.885 0.746 0.806 0.774 0.751 0.806 0.781 0.746 0.806 0.807 0.804 0.807 0.807 0.804 0.807 0.807 0.865 0.911 0.894 0.865 0.911 0.897 0.865	800	0.903	0.902	0.899	0.899	0.897
0.903 0.902 0.900 0.904 0.902 0.901 0.905 0.903 0.901 0.906 0.905 0.902 0.907 0.905 0.903 0.907 0.906 0.906 0.904 0.906 0.908 0.907 0.904 0.908 0.904 0.906 0.908 0.807 0.809 0.894 0.806 0.885 0.894 0.870 0.884 0.864 0.870 0.875 0.818 0.871 0.875 0.746 0.872 0.774 0.746 0.793 0.774 0.759 0.806 0.787 0.804 0.829 0.810 0.759 0.829 0.810 0.826 0.824 0.826 0.826 0.827 0.828 0.826 0.829 0.829 0.829 0.912 0.891 0.882 <td< td=""><td>805</td><td>0.904</td><td>0.905</td><td>0.900</td><td>0.900</td><td>0.897</td></td<>	805	0.904	0.905	0.900	0.900	0.897
0.904 0.902 0.901 0.905 0.903 0.901 0.907 0.905 0.903 0.907 0.906 0.903 0.907 0.906 0.903 0.904 0.904 0.908 0.904 0.904 0.908 0.904 0.904 0.908 0.809 0.809 0.894 0.806 0.875 0.843 0.849 0.849 0.843 0.870 0.843 0.843 0.871 0.849 0.818 0.872 0.849 0.849 0.793 0.774 0.746 0.793 0.774 0.759 0.806 0.787 0.804 0.829 0.810 0.781 0.829 0.834 0.826 0.829 0.834 0.826 0.905 0.895 0.895 0.912 0.891 0.885 0.916 0.897 0.896 0.917 0.897 0.885 0.911 0.897 0.896	810	0.903	0.905	0.900	0.900	0.897
0.905 0.903 0.901 0.905 0.905 0.902 0.907 0.905 0.903 0.904 0.906 0.906 0.904 0.905 0.908 0.904 0.905 0.908 0.901 0.904 0.908 0.894 0.889 0.843 0.805 0.843 0.843 0.870 0.843 0.843 0.843 0.849 0.818 0.843 0.784 0.746 0.798 0.774 0.751 0.799 0.780 0.751 0.806 0.781 0.752 0.807 0.834 0.826 0.854 0.834 0.826 0.877 0.858 0.826 0.894 0.885 0.852 0.905 0.895 0.865 0.912 0.899 0.899 0.912 0.899 0.866	815		0.902	0.901	0.901	0.898
0.905 0.905 0.902 0.907 0.905 0.903 0.904 0.906 0.906 0.904 0.906 0.908 0.904 0.908 0.908 0.904 0.904 0.908 0.804 0.899 0.894 0.806 0.885 0.843 0.807 0.885 0.843 0.808 0.849 0.843 0.843 0.849 0.843 0.843 0.843 0.746 0.798 0.774 0.746 0.798 0.774 0.746 0.799 0.787 0.781 0.854 0.834 0.804 0.854 0.852 0.826 0.877 0.858 0.826 0.894 0.885 0.852 0.905 0.895 0.865 0.912 0.896 0.866 0.918 0.897 0.865 0.917 0.897 0.865	820		0.903	0.901	0.902	0.899
0.907 0.905 0.903 0.905 0.906 0.906 0.904 0.906 0.908 0.904 0.906 0.908 0.904 0.908 0.908 0.804 0.899 0.894 0.806 0.885 0.843 0.807 0.843 0.843 0.870 0.849 0.818 0.871 0.849 0.818 0.872 0.795 0.766 0.798 0.774 0.746 0.798 0.774 0.746 0.829 0.810 0.781 0.824 0.826 0.826 0.825 0.826 0.826 0.824 0.826 0.826 0.827 0.810 0.826 0.894 0.885 0.852 0.905 0.885 0.865 0.912 0.894 0.866 0.918 0.898 0.866	825	0.905	0.905	0.902	0.903	0.899
0.905 0.906 0.905 0.904 0.904 0.906 0.904 0.905 0.908 0.901 0.904 0.908 0.902 0.908 0.908 0.803 0.899 0.894 0.806 0.875 0.843 0.870 0.849 0.818 0.843 0.849 0.818 0.843 0.823 0.751 0.798 0.774 0.751 0.793 0.774 0.759 0.804 0.810 0.781 0.829 0.810 0.781 0.824 0.834 0.826 0.854 0.858 0.826 0.854 0.858 0.852 0.905 0.895 0.865 0.912 0.891 0.895 0.918 0.899 0.866 0.917 0.899 0.865	830		0.905	0.903	0.905	0.902
0.904 0.904 0.906 0.904 0.905 0.908 0.901 0.904 0.908 0.894 0.899 0.903 0.895 0.894 0.894 0.806 0.885 0.853 0.884 0.843 0.818 0.843 0.849 0.818 0.843 0.823 0.766 0.798 0.776 0.766 0.798 0.774 0.751 0.806 0.787 0.751 0.829 0.810 0.781 0.824 0.834 0.804 0.825 0.826 0.826 0.854 0.858 0.826 0.894 0.874 0.852 0.905 0.885 0.852 0.912 0.894 0.865 0.912 0.894 0.866 0.918 0.898 0.866 0.917 0.897 0.865 0.917 0.897 0.865	835	0.905	906:0	0.905	0.905	0.903
0.904 0.905 0.908 0.901 0.904 0.908 0.894 0.899 0.903 0.891 0.899 0.894 0.896 0.853 0.853 0.887 0.843 0.843 0.843 0.823 0.766 0.815 0.795 0.766 0.798 0.774 0.751 0.806 0.787 0.781 0.807 0.810 0.781 0.806 0.787 0.804 0.807 0.810 0.826 0.877 0.858 0.826 0.894 0.874 0.852 0.905 0.885 0.852 0.912 0.894 0.895 0.912 0.895 0.865 0.918 0.896 0.866 0.917 0.898 0.866	840	0.904	0.904	906'0	0.905	0.905
0.901 0.904 0.908 0.894 0.899 0.903 0.891 0.894 0.894 0.906 0.885 0.853 0.896 0.875 0.843 0.870 0.849 0.818 0.843 0.823 0.793 0.798 0.774 0.766 0.793 0.774 0.751 0.806 0.787 0.781 0.807 0.816 0.781 0.807 0.874 0.826 0.877 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.905 0.885 0.852 0.912 0.894 0.895 0.912 0.895 0.865 0.918 0.896 0.866 0.918 0.898 0.866	845	0.904	0.905	0.908	0.905	0.907
0.894 0.899 0.903 0.891 0.894 0.894 0.906 0.885 0.853 0.896 0.875 0.843 0.884 0.849 0.818 0.843 0.823 0.793 0.798 0.774 0.766 0.793 0.774 0.746 0.806 0.774 0.751 0.807 0.787 0.780 0.854 0.810 0.826 0.877 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.905 0.885 0.852 0.912 0.894 0.885 0.912 0.895 0.865 0.918 0.899 0.866 0.917 0.899 0.865 0.917 0.899 0.865	850		0.904	0.908	0.905	0.906
0.891 0.890 0.894 0.906 0.885 0.853 0.896 0.875 0.843 0.884 0.864 0.832 0.870 0.849 0.818 0.843 0.793 0.795 0.798 0.774 0.746 0.806 0.774 0.751 0.807 0.810 0.746 0.854 0.810 0.781 0.877 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.894 0.885 0.912 0.895 0.859 0.916 0.899 0.865 0.918 0.899 0.865 0.918 0.899 0.865 0.917 0.899 0.865	855	0.894	0.899	0.903	0.899	0.901
0.906 0.885 0.853 0.896 0.875 0.843 0.884 0.864 0.832 0.870 0.849 0.818 0.843 0.818 0.793 0.798 0.774 0.766 0.793 0.774 0.751 0.806 0.787 0.759 0.829 0.810 0.759 0.874 0.858 0.826 0.874 0.878 0.826 0.905 0.885 0.852 0.912 0.885 0.852 0.912 0.895 0.859 0.918 0.895 0.865 0.918 0.898 0.866 0.918 0.898 0.866 0.917 0.897 0.865	860		0.890	0.894	0.889	0.892
0.896 0.875 0.843 0.884 0.864 0.832 0.870 0.849 0.818 0.843 0.823 0.793 0.815 0.795 0.766 0.798 0.774 0.746 0.806 0.787 0.781 0.829 0.810 0.781 0.854 0.858 0.826 0.894 0.874 0.852 0.905 0.885 0.852 0.912 0.891 0.852 0.912 0.895 0.865 0.916 0.891 0.865 0.917 0.899 0.865 0.917 0.899 0.866	865	906.0	0.885	0.853	0.876	0.840
0.884 0.864 0.832 0.870 0.849 0.818 0.843 0.823 0.793 0.815 0.795 0.766 0.798 0.774 0.751 0.806 0.787 0.759 0.829 0.810 0.781 0.854 0.834 0.826 0.877 0.858 0.826 0.905 0.885 0.852 0.905 0.885 0.852 0.912 0.891 0.852 0.912 0.895 0.865 0.918 0.898 0.866 0.918 0.898 0.866 0.917 0.897 0.865	870	0.896	0.875	0.843	0.866	0.830
0.870 0.849 0.818 0.843 0.823 0.793 0.815 0.795 0.766 0.798 0.774 0.751 0.806 0.787 0.759 0.829 0.810 0.781 0.854 0.834 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.905 0.885 0.852 0.912 0.894 0.895 0.916 0.899 0.865 0.918 0.899 0.865 0.918 0.898 0.866 0.918 0.899 0.865	875	0.884	0.864	0.832	0.856	0.821
0.843 0.823 0.793 0.815 0.795 0.766 0.798 0.780 0.751 0.806 0.774 0.746 0.829 0.810 0.781 0.854 0.834 0.826 0.894 0.877 0.858 0.905 0.885 0.852 0.905 0.885 0.852 0.912 0.894 0.859 0.912 0.895 0.865 0.918 0.898 0.865 0.918 0.898 0.865 0.918 0.898 0.866 0.917 0.897 0.865	880	0.870	0.849	0.818	0.841	0.805
0.815 0.795 0.766 0.798 0.774 0.746 0.829 0.774 0.746 0.829 0.810 0.781 0.824 0.834 0.804 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.885 0.852 0.912 0.894 0.865 0.916 0.897 0.865 0.916 0.898 0.865 0.917 0.898 0.865 0.918 0.897 0.865	885	0.843	0.823	0.793	0.816	0.782
0.798 0.780 0.751 0.793 0.774 0.746 0.806 0.787 0.759 0.829 0.810 0.781 0.854 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.865 0.918 0.898 0.865 0.917 0.897 0.865	890		0.795	0.766	0.787	0.755
0.793 0.774 0.746 0.806 0.787 0.759 0.829 0.810 0.781 0.854 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.891 0.865 0.918 0.897 0.866 0.917 0.897 0.866	895	0.798	0.780	0.751	0.772	0.740
0.806 0.787 0.759 0.829 0.810 0.781 0.854 0.834 0.804 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.866	900		0.774	0.746	0.766	0.735
0.829 0.810 0.781 0.854 0.834 0.804 0.877 0.858 0.826 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.866	905		0.787	0.759	0.779	0.748
0.854 0.834 0.804 0.877 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.865	910		0.810	0.781	0.803	0.770
0.877 0.858 0.826 0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.865	915		0.834	0.804	0.826	0.793
0.894 0.874 0.842 0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.865	920		0.858	0.826	0.849	0.815
0.905 0.885 0.852 0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.865	925		0.874	0.842	0.866	0.831
0.912 0.891 0.859 0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.865	930		0.885	0.852	0.876	0.841
0.916 0.897 0.865 0.918 0.898 0.866 0.917 0.897 0.865	935		0.891	0.859	0.882	0.847
0.918 0.898 0.866 0.917 0.897 0.865	940		0.897	0.865	0.887	0.852
0.917 0.897 0.865	945		0.898	0.866	0.889	0.854
	950	0.917	0.897	0.865	0.888	0.854

	HITACHI U-200	0 - POLYCAST	FECHNOLOGY	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	
		0,1	SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.882	0.882	0.882	0.883	0.882
455	0.884	0.884	0.884	0.884	0.884
460	0.886	0.885	0.885	9880	0.885
465	0.887	0.887	0.886	0.887	0.887
470	0.888	0.888	0.888	0.888	0.888
475	0.889	0.889	0.889	0.89	0.889
480	0.89	0.89	68.0	0.891	0.89
485	0.892	0.891	0.892	0.892	0.892
490	0.892	0.892	0.892	0.892	0.892
495	0.893	0.892	0.893	0.893	0.893
200	0.893	0.893	0.893	0.893	0.893
505	0.894	0.894	0.894	0.894	0.893
510	0.895	0.894	0.895	0.895	0.895
515	0.895	0.895	0.895	0.895	0.895
520	968.0	0.895	0.895	0.895	0.895
525	968.0	0.895	968.0	0.895	0.895
530	968.0	0.895	968.0	968.0	0.896
535	968.0	0.896	0.895	0.896	0.896
540	0.896	0.896	0.896	968.0	0.896
545	968.0	0.895	0.896	968.0	0.896
550	0.897	0.896	0.896	0.896	0.896
555	0.897	0.896	0.896	0.897	0.897
260	0.897	0.896	0.897	0.897	0.897
595	0.898	0.897	0.897	0.898	0.897
570	0.898	0.897	0.897	0.898	0.898
575	0.899	0.897	0.897	0.898	0.898
580	0.8	0.898	0.898	0.898	0.898
585	6.0	0.898	0.899	0.899	0.899
590	0.901	0.898	0.899	0.899	0.899
595	0.901	0.899	0.0	6.0	0.899
009		0.9	0.901	0.901	0.901
605		0.901	0.901	0.901	0.901
610		0.901	0.902	0.902	0.901
615	0.903	0.901	0.905	0.902	0.902

wavelength					
wavelength			SAMPLE 1		
	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.))	(trans.)	(trans.)
620	0.904	0.902		0.903	0.903
625	0.905	0.904		0.904	0.904
930	906.0	0.904		0.905	0.905
635	0.907	0.906		0.907	0.906
640	0.908	0.907		0.908	0.907
645	0.909	0.908	0.908	606:0	0.908
650	0.91	0.909	606'0	0.91	0.909
655	0.911	0.909		0.91	0.91
099	0.911	16:0		0.91	0.91
999	0.911	16:0	0.91	0.911	0.91
0.09	0.911	16:0	0.91	0.911	0.91
675	0.912	16:0	0.91	0.912	0.912
089	0.912	0.912	0.911	0.912	0.912
685	0.913	0.912	0.912	0.913	0.912
069	0.913	0.912	0.912	0.913	0.912
695	0.913	0.912	0.912	0.913	0.912
700	0.913	0.912	0.912	0.913	0.912
705	0.912	0.911	0.912	0.912	0.911
710	0.911	0.91	0.91	0.911	0.91
715	0.908	0.908	0.908	0.909	0.908
720	906.0	0.906		0.907	0.906
725	0.905	0.902		0.902	0.902
730	0.901	0.899	0.8	0.901	0.0
735	0.0	0.899		6.0	0.899
740	0.902	0.902		0.902	0.902
745	0.905	0.904		0.905	0.904
750	0.907	0.908	0.908	0.908	0.907
755	. 0.91	0.91	0.91	0.91	0.91
092	0.912	0.911	0.912	0.912	0.912
765	0.912	0.912	0.912	0.912	0.912
170	0.911	0.912	0.912	0.912	0.912
775	0.91	0.911	0.911	0.911	0.911
780	0.91	16.0		0.91	0.911
785	0.91	0.91	0.91	0.91	0.91

	HITACHI U-200	0 - POLYCAST	TECHNOLOGY	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	7
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790	0.908	0.908	0.908	806'0	0.909
795	0.907	0.908	0.907	806.0	0.908
800		0.907	0.907	0.907	0.907
805	206'0	0.907	0.907	0.907	0.907
810	206'0	0.907	0.908	0.907	0.907
815	206'0	0.908		0.907	0.907
820	806.0	0.908	0.908	0.908	0.908
825	806'0	0.909	0.909	0.909	0.909
830	806'0	0.91	0.909	0.909	0.91
835	806'0	606:0	0.909	0.909	0.909
840	0.907	0.908	0.907	806.0	0.908
845	906'0	0.907	0.907	0.907	0.907
850	606'0	0.904	0.904	0.904	0.904
855	868.0	0.899	0.899	868.0	0.899
098	68.0	0.892	0.891	0.892	0.892
865	0.882	0.882	0.882	0.882	0.882
870	0.871	0.872	0.871	0.872	0.872
875	98.0	0.86	98.0	98.0	0.861
880		0.843	0.843	0.843	0.843
885	0.814	0.813	0.814	0.814	0.814
068		0.787	0.788	0.787	0.787
895		0.775	0.775	0.775	0.776
006		0.773	0.773	0.773	0.774
905		0.792	0.791	0.791	0.792
910	0.817	0.817	0.817	0.817	0.818
915		0.842	0.843	0.842	0.843
920	0.864	0.864	0.864	0.864	0.865
925		0.878	0.878	0.878	0.879
930		0.887	0.887	0.887	0.888
935		0.894	0.895	0.895	0.895
940	0.0	0.897		0.898	0.899
945		0.899		0.899	0.901
950	0.898	0.897		0.897	0.898

2	OPTRONICS MO	DEL 736 RA	OPTRONICS MODEL 736 RADIOMETER - TEXSTAR,INC.	STAR,INC.	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.910	0.901	606.0	0.907	0.921
455	0.914	0.906	0.913	0.912	0.937
460	0.927	0.918	0.925	0.925	0.936
465	0.922	0.914	0.920	0.922	0.933
470	0.923	0.916	0.919	0.919	0.937
475	0.924	0.915	0.921	0.920	0.937
480	0.927	0.913	0.922	0.922	0.936
485	0.927	0.915	0.924	0.922	0.936
490	0.928	0.915	0.921	0.921	0.935
495	0.927	0.915	0.921	0.920	0.937
200	0.929	0.916		0.921	0.939
202	0.927	0.915		0.918	0.937
210	0:630	0.916	0.924	0.920	0.938
515	0.931	0.916		0.921	0.937
520	0.932	0.916	0.927	0.921	0.939
525	0.928	0.916		0.919	0.935
530	0.930	0.916	0.923	0.919	0.936
535	0.929	0.915	0.921	0.917	0.933
540	0.930	0.913	0.918	0.918	0.933
545	0.928	0.913	0.920	0.917	0.932
550	0.931	0.913		0.918	0.935
555	0:630	0.915		0.916	0.932
260	0.929	0.915		0.917	0.933
265	0:630	0.915		0.918	0.933
570	0.930	0.913	0.920	0.917	0.933
575	0.932	0.915	0.919	0.917	0.933
280	0.932	0.914		0.916	0.934
585	0.932	0.913	0.920	0.915	0.932
290	0.932	0.914		0.915	0.933
595	0.933	0.916		0.916	0.935
009	0.932	0.916		0.917	0.932
905	0.932	0.916	0.920	0.917	0.932
610	0.931	0.916	0.921	0.914	0.932
615	0.934	0.919	0.926	0.918	0.935

	OPTRONICS MODEL 736 RADIOMETER - TEXSTAR, INC.	DDEL 736 RAD	HOMETER - TE	XSTAR,INC.	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.938	0.921	0.929	0.923	0.938
625	0.939	0.924	0.929	0.924	0.939
630	0.940	0.925	0:630	0.925	0.939
635	0.942	0.927	0.933	0.926	0.940
640	0.942	0.927	0.932	0.926	0.940
645	0.942	0.925	0.932	0.928	0.940
959	0.943	0.927	0.931	0.928	0.939
929	0.944	0.928	0.934	0.928	0.937
099	0.943	0.929	0.934	0.929	0.933
599	0.944	0.929	0.935	0.930	0.933
0/9	0.944	0.930	0.935	0.931	0.933
675	0.945	0.930	0.936	0.931	0.933
089	0.946	0:630	0.936	0.930	0.934
985	0.945	0.931	0.935	0.930	0.934
069	0.947	0.932	0.938	0.933	0.935
969	0.947	0.933	0.937	0.934	0.935
700	0.945	0.932	0.936	0.932	0.933
705	0.944	0.932	0.936	0.932	0.931
710	0.945	0.932	0.936	0.931	0.931
715	0.943	0.931	0.933	0.929	0.928
720	0.940	0.928	0.931	0.927	0.930
725	0.934	0.922	0.929	0.921	0.924
730	0.934	0.922		0.920	0.923
735	0.933	0.922		0.919	0.918
740	0.935	0.923			0.918
745	0.938	0.927	0.928	0.922	0.924
750	0.942	0.930	0.931	0.928	0.929
755	0.944	0.931	0.933		0.931
092	0.947	0.934	0.936	0.930	0.934
765	0.947	0.936			0.939
770	0.946	0.934	0.936		0.939
775	0.946	0.934			0.934
780	0.946	0.934			0.933
785	0.946	0.933	0.934	0.930	0.931

	OPTRONICS M	IODEL 736 RA	OPTRONICS MODEL 736 RADIOMETER - TEXSTAR, INC.	XSTAR,INC.	
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
062	0.943	0.931	0.933	0.928	0.931
795	0.942	0.931	0.933	0.927	0.931
008	0.944	0.932	0.934	0.927	0.932
802	0.942	0.932	0.933	0.927	0.932
810	146.0	0.933	0.933	0.926	0.933
815	0.942	0.931	0.932	0.927	0.933
820		0.934	0.934	0.929	0.934
825	0.945	0.935	586.0	0.929	0.936
830		0.934	0.934	0.930	0.934
835	0.942	0:630	0.931	0.926	0.932
840		0.930		0.928	0.933
845	0.941	0.930	0:630	0.925	0.931
850		0.925		0.921	0.928
855	0:630	0.920		0.915	0.922
098		0.911	606'0	906:0	0.912
865	0.912	0.901	0.901	0.895	0.903
870		0.890	0.889	0.885	0.892
875	0.890	0.879	0.878	0.873	0.881
880		0.859	0.859	0.854	0.861
885	0.840	0.831	0.831	0.826	0.833
068	0.817	0.806	908:0	0.801	0.808
895	0.802	0.793	0.789	0.788	0.794
006		0.793	0.790	0.787	0.795
905		0.810	0.805	0.803	0.808
910		0.836	0.831	0.829	0.837
915		0.861	0.855	0.855	0.861
920		0.884		0.877	0.887
925		0.899	0.893	0.892	0.902
930		0.906		0.903	0.911
935		0.914		0.908	0.917
940		0.917	0.912	0.912	0.919
945		0.920		0.916	0.922
950	0.927	0.917	0.914	0.913	0.919

(trans.) ((10.879) (10.881) (10.881) (10.882) (10.885) (10.886) (10.892) (10.892) (10.894) (10.894) (10.894) (10.894) (10.894) (10.894) (10.894) (10.894) (10.894) (10.894) (10.895) (10.895) (10.895) (10.895) (10.897) (10.897) (10.897) (10.897) (10.897) (10.897) (10.898) (10.897) (10.898) (10.897) (10.898) (1				
(trains.) (trains.) ((trains.) (0.879) (0.881) (0.881) (0.885) (0.885) (0.890) (0.891) (0.894) (0.894) (0.894) (0.894) (0.894) (0.894) (0.894) (0.894) (0.894) (0.895)		SAMPLE 1		-
(trans.) ((trans.) (0.879) 0.879 0.881 0.885 0.885 0.886 0.896 0.891 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.895 0.895 0.895 0.896 0.897 0.897 0.897 0.898	Rep. 2	Rep. 3	Rep. 4	Rep. 5
0.879 0.883 0.885 0.885 0.885 0.886 0.890 0.890 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.895 0.895 0.896 0.896 0.897 0.897 0.897 0.898	(trans.)	(trans.)	(trans.)	(trans.)
0.881 0.885 0.885 0.886 0.886 0.890 0.891 0.892 0.892 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.897 0.895 0.896 0.897 0.897 0.897 0.897 0.897 0.897	0.880	0.878	0.880	0.877
0.883 0.885 0.886 0.886 0.890 0.890 0.892 0.892 0.892 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.897 0.896 0.897 0.897 0.897 0.897 0.898 0.897 0.898 0.898 0.896 0.897	0.882	0.880	0.882	0.879
0.885 0.886 0.886 0.886 0.880 0.890 0.891 0.892 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.897 0.896 0.896 0.897 0.897 0.898	0.882	0.881	0.884	0.881
0.885 0.886 0.888 0.890 0.890 0.891 0.892 0.893 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.895 0.895 0.896 0.896 0.897 0.897 0.898	0.885	0.884	0.886	0.882
0.886 0.898 0.890 0.890 0.891 0.892 0.892 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.894 0.895 0.898 0.895 0.896 0.896 0.896 0.897 0.897 0.898	9880	0.885	0.887	0.883
0.888 0.890 0.891 0.891 0.892 0.892 0.894 0.894 0.894 0.894 0.894 0.894 0.895 0.895 0.895 0.895 0.896 0.897 0.897 0.897 0.897 0.897 0.897 0.897 0.897	9880	988.0	0.888	0.885
	0.889	0.887	0.890	0.886
	0.890	0.888	0.890	0.888
	0.891	0.888	0.891	0.888
	0.891	0.890	0.892	0.889
	0.892	0.890	0.893	0.889
	0.892	0.891	0.893	0.890
	0.892	0.891	0.893	0.890
	0.893	0.892	0.895	0.891
	0.894	0.893	0.894	0.892
	0.895	0.893	0.895	0.892
	0.894	0.893	968.0	0.891
	0.895	0.894	0.895	0.892
	0.894	0.893	0.895	0.892
	0.895	0.893	0.895	0.892
	0.895	0.892	0.896	0.893
	0.895	0.893	968.0	0.893
	0.895	0.894	0.897	0.894
	0.895	0.895	968.0	0.894
	968.0	0.895	0.897	0.894
	968.0	0.895	0.898	0.894
	868.0	968.0	0.898	0.895
	0.898	968.0	0.898	0.896
	0.898	0.896	0.898	968.0
	0.898	0.897	0.899	0.897
	0.898	0.897	0.899	0.898
	0.899	0.898	0.900	0.899
	0.901	0.899	0.901	0.899
615 0.901	0.905	0.900	0.902	668.0

wavelength Rep. 1 (nm) (trans.) (a) (0.901 (620 0.902 (630 0.903 (635 0.903 (636 0.905 (640 0.906 (640 0.906 (641 0.906 (642 0.906 (643 0.906 (644 0.908 (645 0.909 (646 0.909 (647 0.910 (648 0.911 (649 0.911 (640 0.911 (641 0.911 (642 0.911 (643 0.911 (644 0.909 (655 0.909 (656 0.909 (657 0.909 (658 0.909 (659 0.909 (650 0.909 (650 0.909 (650 0.909 (650 0.909 </th <th></th> <th></th> <th></th> <th></th>				
	51	SAMPLE 1		
	Rep. 2	Rep. 3	Rep. 4	Rep. 5
	(trans.)	(trans.)	(trans.)	(trans.)
	0.901	0.900	0.905	0.900
	0.901	0.900	0.904	0.901
	0.004	0.902	0.904	0.902
	0.904	0.904	906.0	0.904
	106.0	0.905	906:0	0.905
	0.907	906.0	0.908	0.905
	0.908	0.907	0.908	0.907
	0.006	0.907	0.000	0.907
	0.910	0.908	0.910	0.908
	606.0	0.908	0.910	0.908
	0.909	0.908	0.910	0.908
	0.910	606:0	0.911	0.908
	0.910	0.909	0.910	0.909
	0.910	0.909	0.911	0.909
	0.912	0.910	0.912	0.911
	0.912	0.911	0.913	0.910
	0.912	0.911	0.912	0.910
	0.911	0.910	0.912	0.909
	0.00	0.908	0.910	0.908
	806.0	0.907	606.0	0.907
	0.905	0.903	906.0	0.903
	0.901	0.900	0.905	0.900
	0.899	0.897	0.900	0.898
	0.899	0.898	0.900	0.897
	0.902	0.900	0.903	0.900
	0.904	0.904	0.905	0.903
	906.0	906.0	0.908	0.905
	0.908	0.908	0.911	0.908
	0.910	0.909	0.911	0.909
	0.912	0.910	0.914	0.911
	0.912	0.911	0.913	0.910
	0.909	0.908	0.912	0.910
	0.910	0.908	0.911	0.908
785 0.908	0.910	0.907	0.911	0.908

Ω	IV/VIS/NIR SPEC	TROPHOTO	METER -SIERR	UV/VIS/NIR SPECTROPHOTOMETER -SIERRACIN/SYLMAR CORP.	CORP.
			SAMPLE 1		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
190	0.908	0.908	206'0	0.910	906'0
795	906'0	906:0	906.0	0.907	0.905
800	0.905	0.907		0.907	0.905
805	0.905	0.906		0.907	0.905
810	906'0	0.907	0.905	806.0	0.903
815	906'0	0.905		806.0	0.906
820	606'0	0.909		606'0	0.907
825	0.907	0.907	706.0	606'0	0.907
830	0.910	0.909		0.914	0.907
835	606.0	0.910	0.910	0.912	0.907
840	0.906	0.909	206.0	0.912	0.906
845	0.905	0.908		906.0	0.908
820	0.905	0.904		206.0	0.902
855	0.893	0.900		006.0	0.898
098	0.888	0.890		0.893	0.889
865	0.888	0.895		0.899	0.885
870	0.880	0.884	0.885	0680	0.874
875	0.868	0.864		0.865	0.862
880	0.849	0.850		0.853	0.844
885	0.820	0.828		0.825	0.814
068	0.791	0.798	0.794	0.799	0.789
895	7777	0.785		0.786	0.780
006	0.776	0.786		0.788	0.781
905	0.810	0.807		0.809	0.798
910	0.821	0.828	0.830	0.835	0.825
915	0.841	0.852	0.853	0.855	0.852
920	. 0.877	0.876			0.870
925	988.0	0.899	0.892	968.0	0.884
930	0.892	0.888			0.894
935	0.908	0.905			0.901
940	0.910	0.916	0.914		0.901
945	0.905	0.907	0.901	0.905	0.903
950	0.907	0.910	0.914	0.915	0.901

	EG&G RADOMA	SPECTRARA	EG&G RADOMA SPECTRARADIOMETER: ARMSTRONG LAB (HECV)	ISTRONG LAB	(HECV)
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.783	0.778	0.799	0.802	0.790
455	0.783	0.779	0.796	0.788	0.796
460	0.783	0.780	0.799	0.802	0.792
465	0.790	0.789	908'0	0.801	0.798
470	0.793	0.795	0.801	0.803	908.0
475	0.795	062'0	0.800	0.792	0.796
480	0.793	0.785	0.803	0.805	0.80
485	0.797	0.795	0.805	0.804	0.802
490	0.794	0.798	0.805	0.806	0.802
495	0.789	0.800	0.805	0.803	0.804
200	0.797	0.800	0.810	0.807	0.810
505	0.794	0.796	0.808	0.809	0.809
510	0.801	0.801	0.808	0.809	0.816
515	0.800	0.798	0.811	0.811	0.809
520	0.797	0.803	0.812	0.807	0.814
525	0.797	0.801	0.811	0.814	0.811
530	0.799	0.802	0.814	0.814	0.806
535	908.0	0.803	0.814	0.813	0.810
540	0.805	0.802	0.814	0.810	0.816
545	0.804	0.797	0.814	0.810	0.819
550	0.804	0.800	0.810	0.809	0.818
555	0.804	0.801	0.809	0.811	0.810
260	0.805	0.803	0.812	0.812	0.812
595	0.805	908.0	0.813	0.812	0.806
570	908.0	0.804	0.814	0.816	0.822
575	0.805	0.801	0.818	0.815	0.813
280	0.803	0.804	0.819	0.814	0.817
585	0.80	0.810	0.816	0.819	0.815
290	0.80	0.813	0.819	0.818	0.817
595	0.814	0.812	0.820	0.822	0.821
009	0.812	0.813	0.819	0.817	0.825
902	0.813	0.814	0.820	0.819	0.821
610	0.814	0.817	0.821	0.823	0.824
615	0.816	0.818	0.830	0.828	0.824

<u>I</u>	G&G RADOM	A SPECTRARA	DIOMETER - AF	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	3 (HECV)
- Company Company			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.823	0.823	0.834	0.832	0.826
625	0.826	0.824	0.839	0.833	0.832
630	0.829	0.826	0.838	0.833	0.833
635	0.830	0.832	0.841	0.840	0.834
640	0.834	0.830	0.843	0.842	0.845
645	0.834	0.834	0.844	0.845	0.842
029	0.837	0.835	0.849	0.846	0.844
655	0.840	0.839	0.853	0.851	0.844
099	0.844	0.841	0.853	0.855	0.847
999	0.846	0.849	0.861	0.857	0.857
0.09	0.844	0.844	0.861	0.853	0.852
675	0.849	0.846	0.858	098.0	0.845
089	0.846	0.846	0.858	0.858	0.857
685	0.850	0.845	0.863	0.855	0.855
069	0.852	0.851	098.0	098.0	0.852
965	0.850	0.849	0.856	0.861	0.855
700	0.852	0.850	0.864	0.861	0.862
705	0.854	0.855	0.865	0.863	0.859
710	0.857	0.850	0.864	0.861	0.854
715	0.858	0.858	1.867	998.0	0.862
720	0.857	0.858		0.864	0.865
725	0.856	0.854		0.865	0.866
730	0.855	0.853	0.861	0.861	0.855
735	0.851	0.851	0.861	0.858	0.859
740	0.849	0.851	0.858	0.859	0.859
745	· 0.854	0.854	0.866	0.864	0.858
750	0.859	0.858	0.867	0.865	0.865
755	0.865	0.862	978.0	0.869	0.861
160	0.864	0.863	0.874	0.871	0.870
765	0.867	0.863		0.872	0.882
770	0.867	0.861		0.871	0.880
775	0.867	0.862		0.873	0.883
780	0.863	0.863		0.867	0.880
785	0.864	098.0	0.870	0.871	0.875

wavelength Rep. 1 Rep. 2 Rep. 3 Rep. 4 R (mm) (trans.)	1	CG&G RADOMA	SPECTRARA	DIOMETER - AI	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	(HECV)
Rep. 1 Rep. 2 Rep. 3 Rep. 4 Rep. 5 (trans.) (trans.)				SAMPLE 2		
(trans.) (trans.)	wavelength	Rep. 1			Rep. 4	Rep. 5
0.859 0.856 0.870 0.867 0.864 0.869 0.867 0.867 0.865 0.867 0.867 0.871 0.870 0.872 0.871 0.871 0.871 0.873 0.871 0.871 0.871 0.872 0.873 0.873 0.871 0.873 0.873 0.873 0.872 0.873 0.873 0.873 0.868 0.864 0.874 0.873 0.868 0.864 0.873 0.873 0.868 0.867 0.862 0.862 0.869 0.867 0.862 0.862 0.869 0.867 0.862 0.862 0.868 0.867 0.862 0.862 0.875 0.886 0.862 0.862 0.874 0.884 0.884 0.884 0.841 0.844 0.844 0.844 0.843 0.844 0.844 0.824 0.834 0.	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.864 0.860 0.867 0.867 0.866 0.866 0.871 0.871 0.870 0.872 0.871 0.877 0.871 0.859 0.873 0.871 0.871 0.869 0.877 0.877 0.876 0.876 0.875 0.875 0.876 0.873 0.877 0.877 0.868 0.864 0.877 0.877 0.868 0.867 0.875 0.877 0.868 0.862 0.865 0.862 0.869 0.867 0.875 0.871 0.869 0.867 0.875 0.871 0.860 0.862 0.862 0.862 0.870 0.871 0.872 0.872 0.871 0.872 0.872 0.872 0.872 0.872 0.872 0.872 0.843 0.842 0.842 0.842 0.844 0.842 0.842 0.824 0.81 0.8	062	0.859	0.856	0.870	0.869	0.872
0.866 0.860 0.867 0.871 0.870 0.872 0.871 0.871 0.871 0.872 0.871 0.871 0.871 0.873 0.873 0.873 0.876 0.874 0.875 0.877 0.876 0.873 0.877 0.877 0.876 0.874 0.877 0.877 0.868 0.867 0.877 0.877 0.886 0.867 0.867 0.877 0.886 0.867 0.867 0.877 0.840 0.841 0.846 0.847 0.841 0.846 0.847 0.847 0.842 0.823 0.846 0.847 0.843 0.846 0.847 0.846 0.844 0.823 0.846 0.846 0.844 0.824 0.846 0.846 0.844 0.824 0.846 0.846 0.844 0.824 0.826 0.826 0.844 0.	S6L	0.864	0.860	698.0	0.867	0.875
0.870 0.867 0.872 0.867 0.867 0.873 0.871 0.871 0.871 0.869 0.875 0.875 0.875 0.876 0.874 0.875 0.877 0.877 0.876 0.873 0.875 0.877 0.877 0.868 0.864 0.875 0.877 0.877 0.868 0.867 0.875 0.877 0.877 0.869 0.867 0.866 0.862 0.872 0.860 0.867 0.866 0.867 0.872 0.870 0.871 0.872 0.872 0.872 0.871 0.872 0.872 0.872 0.872 0.874 0.824 0.823 0.842 0.842 0.844 0.844 0.844 0.844 0.844 0.841 0.844 0.824 0.824 0.824 0.821 0.821 0.826 0.826 0.826 0.823 0.823 0.824	008	998.0	098.0	698.0	0.871	0.880
0.867 0.859 0.873 0.871 0.871 0.869 0.876 0.879 0.876 0.877 0.877 0.876 0.877 0.877 0.868 0.864 0.871 0.877 0.868 0.864 0.871 0.877 0.868 0.867 0.877 0.877 0.868 0.867 0.875 0.877 0.869 0.875 0.862 0.862 0.870 0.875 0.862 0.863 0.871 0.871 0.874 0.874 0.872 0.872 0.872 0.871 0.874 0.874 0.874 0.871 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.871 0.872 0.874 0.874 0.871 0.872 0.872 0.874 0.872 0.873 0.874 0.874 0.872 0.872 0.874	805	0.870	0.867	0.872	0.867	0.881
0.871 0.869 0.876 0.879 0.876 0.877 0.875 0.875 0.876 0.877 0.877 0.877 0.868 0.864 0.871 0.877 0.868 0.864 0.871 0.877 0.868 0.862 0.875 0.875 0.856 0.862 0.862 0.863 0.857 0.851 0.863 0.857 0.870 0.820 0.863 0.857 0.820 0.820 0.863 0.834 0.821 0.820 0.834 0.847 0.844 0.846 0.847 0.846 0.847 0.849 0.846 0.851 0.847 0.849 0.846 0.846 0.841 0.846 0.846 0.846 0.841 0.821 0.821 0.824 0.823 0.824 0.824 0.844 0.824 0.828 0.846 0.844 0.853 0.	810	198.0	0.859	0.873	0.871	0.879
0.876 0.864 0.879 0.875 0.876 0.873 0.873 0.877 0.868 0.864 0.871 0.877 0.868 0.864 0.875 0.875 0.866 0.862 0.862 0.862 0.866 0.867 0.865 0.862 0.876 0.851 0.863 0.863 0.876 0.851 0.863 0.857 0.870 0.820 0.863 0.857 0.871 0.820 0.823 0.834 0.874 0.820 0.821 0.832 0.841 0.846 0.851 0.851 0.843 0.846 0.851 0.851 0.841 0.846 0.851 0.851 0.843 0.846 0.851 0.852 0.844 0.826 0.826 0.866 0.853 0.852 0.864 0.864 0.853 0.852 0.864 0.864 0.853 0.	815	0.871	0.869	928.0	0.879	0.880
0.876 0.873 0.875 0.871 0.868 0.864 0.871 0.871 0.868 0.867 0.875 0.875 0.866 0.862 0.862 0.862 0.866 0.865 0.863 0.863 0.856 0.857 0.863 0.857 0.870 0.870 0.844 0.847 0.871 0.870 0.834 0.834 0.874 0.870 0.823 0.834 0.844 0.844 0.846 0.851 0.843 0.846 0.851 0.844 0.841 0.846 0.851 0.843 0.846 0.851 0.844 0.846 0.854 0.845 0.824 0.826 0.824 0.829 0.826 0.824 0.829 0.826 0.824 0.829 0.826 0.825 0.826 0.826 0.827 0.826 0.826 0.827	820	9280	0.864	0.879	0.875	0.882
0.868 0.864 0.871 0.871 0.868 0.867 0.875 0.875 0.866 0.862 0.862 0.862 0.856 0.855 0.866 0.863 0.871 0.851 0.863 0.857 0.840 0.841 0.846 0.847 0.825 0.820 0.823 0.847 0.826 0.820 0.823 0.815 0.841 0.829 0.834 0.831 0.844 0.846 0.821 0.831 0.841 0.846 0.851 0.846 0.841 0.846 0.846 0.851 0.841 0.846 0.846 0.851 0.841 0.846 0.846 0.846 0.841 0.846 0.846 0.846 0.842 0.846 0.846 0.846 0.843 0.848 0.844 0.848 0.844 0.853 0.848 0.856 0.844 0.	825	9280	0.873	0.875	0.877	0.882
0.868 0.867 0.875 0.875 0.866 0.862 0.862 0.862 0.856 0.855 0.866 0.863 0.857 0.851 0.863 0.857 0.840 0.841 0.846 0.847 0.825 0.820 0.834 0.847 0.826 0.823 0.834 0.841 0.846 0.821 0.842 0.846 0.831 0.843 0.846 0.831 0.844 0.846 0.851 0.847 0.846 0.851 0.841 0.846 0.851 0.841 0.846 0.851 0.849 0.826 0.826 0.841 0.826 0.826 0.824 0.826 0.826 0.853 0.826 0.855 0.854 0.855 0.856 0.855 0.856 0.873 0.856 0.873 0.873 0.856 0.857	830	0.868	0.864	0.871	0.871	0.880
0.866 0.862 0.866 0.863 0.856 0.855 0.866 0.863 0.857 0.851 0.863 0.857 0.840 0.841 0.846 0.847 0.825 0.820 0.834 0.834 0.825 0.820 0.823 0.834 0.826 0.823 0.835 0.835 0.844 0.842 0.823 0.831 0.844 0.841 0.846 0.851 0.843 0.841 0.851 0.851 0.843 0.846 0.851 0.851 0.849 0.824 0.824 0.824 0.801 0.802 0.826 0.826 0.824 0.821 0.826 0.826 0.824 0.821 0.826 0.826 0.825 0.829 0.826 0.826 0.825 0.826 0.826 0.826 0.825 0.826 0.826 0.826 0.827 0.	835	0.868	0.867	0.875	0.875	0.888
0.856 0.857 0.863 0.857 0.840 0.841 0.863 0.857 0.840 0.841 0.846 0.847 0.825 0.820 0.834 0.834 0.811 0.820 0.832 0.835 0.842 0.842 0.845 0.832 0.843 0.844 0.846 0.851 0.843 0.846 0.851 0.851 0.843 0.846 0.851 0.851 0.843 0.846 0.851 0.851 0.841 0.846 0.851 0.851 0.842 0.846 0.851 0.854 0.843 0.846 0.854 0.854 0.853 0.799 0.806 0.855 0.853 0.855 0.855 0.855 0.854 0.855 0.855 0.856 0.854 0.855 0.855 0.856 0.844 0.855 0.855 0.856 0.855 0.	840	0.866	0.862	0.866	0.862	0.883
0.857 0.851 0.863 0.857 0.840 0.841 0.846 0.847 0.825 0.820 0.834 0.834 0.811 0.806 0.823 0.815 0.826 0.820 0.834 0.832 0.844 0.841 0.846 0.851 0.843 0.844 0.846 0.851 0.841 0.846 0.851 0.843 0.836 0.846 0.841 0.824 0.851 0.842 0.836 0.846 0.843 0.824 0.824 0.844 0.826 0.826 0.824 0.826 0.826 0.825 0.826 0.826 0.826 0.826 0.826 0.857 0.855 0.855 0.857 0.855 0.856 0.857 0.856 0.856 0.844 0.855 0.856 0.857 0.855 0.856 0.857	845	0.856	0.855		0.863	0.866
0.840 0.841 0.846 0.847 0.825 0.820 0.823 0.834 0.811 0.806 0.823 0.815 0.842 0.827 0.832 0.832 0.844 0.841 0.846 0.851 0.843 0.846 0.851 0.851 0.843 0.846 0.851 0.846 0.841 0.836 0.846 0.851 0.841 0.836 0.851 0.846 0.841 0.836 0.851 0.854 0.841 0.826 0.824 0.824 0.801 0.802 0.806 0.806 0.824 0.826 0.826 0.826 0.823 0.826 0.826 0.844 0.853 0.855 0.855 0.864 0.855 0.855 0.856 0.856 0.857 0.855 0.856 0.856 0.844 0.855 0.856 0.856 0.852 0.	820	0.857	0.851	0.863	0.857	0.860
0.825 0.820 0.834 0.811 0.806 0.823 0.815 0.826 0.820 0.827 0.832 0.844 0.841 0.846 0.851 0.843 0.840 0.851 0.851 0.841 0.846 0.851 0.851 0.841 0.836 0.846 0.851 0.818 0.836 0.824 0.824 0.801 0.809 0.799 0.806 0.795 0.791 0.801 0.799 0.824 0.824 0.826 0.844 0.823 0.829 0.844 0.855 0.853 0.853 0.855 0.864 0.853 0.855 0.855 0.856 0.854 0.855 0.855 0.856 0.845 0.855 0.855 0.856 0.845 0.855 0.856 0.856 0.844 0.855 0.856 0.856 0.845 0.855 0.	855	0.840	0.841	0.846	0.847	0.842
0.811 0.806 0.823 0.815 0.826 0.827 0.832 0.844 0.842 0.846 0.851 0.847 0.841 0.846 0.851 0.843 0.846 0.851 0.841 0.846 0.851 0.842 0.846 0.851 0.818 0.838 0.846 0.801 0.824 0.824 0.802 0.799 0.806 0.824 0.821 0.820 0.824 0.821 0.826 0.825 0.826 0.844 0.853 0.855 0.855 0.853 0.855 0.856 0.855 0.855 0.856 0.857 0.855 0.856 0.845 0.857 0.856 0.845 0.857 0.856 0.845 0.873 0.874 0.844 0.866 0.873 0.846 0.873 0.873 0.846	098	0.825	0.820		0.834	0.819
0.826 0.820 0.827 0.832 0.844 0.842 0.846 0.851 0.847 0.841 0.846 0.851 0.843 0.846 0.851 0.841 0.846 0.851 0.842 0.846 0.851 0.818 0.824 0.824 0.801 0.826 0.824 0.795 0.791 0.801 0.799 0.824 0.821 0.826 0.826 0.827 0.828 0.826 0.853 0.855 0.856 0.853 0.855 0.864 0.857 0.856 0.856 0.857 0.855 0.856 0.867 0.857 0.856 0.845 0.856 0.856 0.845 0.857 0.856 0.847 0.874 0.874	865	0.811	0.806		0.815	0.814
0.844 0.842 0.846 0.851 0.847 0.841 0.851 0.851 0.843 0.840 0.846 0.851 0.843 0.846 0.851 0.818 0.826 0.824 0.801 0.809 0.799 0.806 0.795 0.791 0.801 0.799 0.824 0.821 0.820 0.826 0.837 0.828 0.844 0.853 0.855 0.855 0.854 0.855 0.864 0.857 0.855 0.856 0.867 0.855 0.856 0.857 0.857 0.856 0.867 0.857 0.858 0.848 0.858 0.858 0.857 0.857 0.858 0.849 0.873 0.874 0.858 0.858 0.858	8.70	0.826	0.820		0.832	0.846
0.847 0.841 0.851 0.851 0.843 0.846 0.851 0.841 0.836 0.846 0.851 0.841 0.824 0.824 0.824 0.818 0.821 0.826 0.824 0.795 0.791 0.801 0.799 0.824 0.821 0.826 0.826 0.837 0.828 0.844 0.844 0.853 0.853 0.855 0.865 0.854 0.855 0.856 0.856 0.857 0.855 0.856 0.856 0.857 0.857 0.856 0.856 0.857 0.857 0.857 0.856 0.844 0.857 0.856 0.856 0.857 0.857 0.856 0.856 0.857 0.857 0.877 0.879 0.858 0.866 0.879 0.874	875	0.844	0.842		0.851	0.837
0.843 0.846 0.851 0.841 0.836 0.838 0.846 0.818 0.821 0.826 0.824 0.801 0.809 0.799 0.806 0.795 0.791 0.801 0.799 0.824 0.821 0.826 0.826 0.837 0.828 0.844 0.844 0.853 0.855 0.855 0.864 0.857 0.855 0.855 0.856 0.857 0.855 0.856 0.856 0.867 0.855 0.856 0.856 0.859 0.855 0.856 0.856 0.844 0.855 0.856 0.856 0.857 0.855 0.856 0.856 0.857 0.857 0.858 0.879 0.844 0.873 0.874 0.879	880	0.847	0.841	0.851	0.851	0.831
0.841 0.836 0.838 0.846 0.818 0.821 0.826 0.824 0.801 0.809 0.799 0.806 0.795 0.791 0.801 0.799 0.824 0.821 0.826 0.826 0.837 0.858 0.844 0.855 0.853 0.853 0.864 0.864 0.857 0.855 0.856 0.856 0.857 0.857 0.856 0.856 0.867 0.857 0.856 0.856 0.844 0.857 0.856 0.856 0.857 0.857 0.856 0.856 0.857 0.857 0.879 0.879 0.844 0.866 0.873 0.879 0.844 0.873 0.879 0.879	885	0.843	0.840		0.851	0.851
0.818 0.824 0.824 0.801 0.809 0.799 0.806 0.795 0.791 0.801 0.799 0.806 0.824 0.823 0.826 0.826 0.826 0.853 0.853 0.848 0.855 0.864 0.859 0.855 0.855 0.864 0.864 0.857 0.867 0.855 0.856 0.856 0.862 0.853 0.856 0.856 0.856 0.845 0.853 0.873 0.873 0.873 0.845 0.856 0.873 0.873 0.873 0.856 0.856 0.873 0.873 0.873 0.858 0.866 0.873 0.873 0.874	068	0.841	0.836		0.846	0.844
0.801 0.809 0.799 0.806 0.795 0.791 0.801 0.799 0.824 0.821 0.820 0.826 0.837 0.823 0.844 0.853 0.853 0.855 0.859 0.855 0.864 0.857 0.855 0.856 0.867 0.852 0.856 0.867 0.852 0.858 0.845 0.853 0.858 0.845 0.853 0.873 0.845 0.853 0.873 0.845 0.866 0.873 0.854 0.873 0.873	895	0.818	0.821	0.826	0.824	0.819
0.795 0.791 0.801 0.799 0.824 0.821 0.820 0.826 0.837 0.828 0.838 0.844 0.853 0.853 0.855 0.864 0.859 0.855 0.864 0.864 0.857 0.867 0.855 0.856 0.862 0.853 0.856 0.856 0.845 0.853 0.873 0.873 0.845 0.866 0.873 0.877 0.858 0.866 0.873 0.879 0.858 0.869 0.873 0.874	006	0.801	0.809		908.0	0.805
0.824 0.821 0.820 0.826 0.837 0.828 0.838 0.844 0.853 0.853 0.848 0.855 0.859 0.855 0.864 0.857 0.855 0.864 0.857 0.852 0.856 0.862 0.873 0.858 0.845 0.853 0.877 0.845 0.866 0.873 0.877 0.858 0.866 0.873 0.879 0.858 0.863 0.881 0.874	506	0.795	0.791	0.801	0.799	0.797
0.837 0.828 0.838 0.844 0.853 0.853 0.848 0.855 0.859 0.855 0.864 0.864 0.862 0.867 0.852 0.856 0.862 0.853 0.858 0.858 0.845 0.853 0.873 0.877 0.844 0.866 0.873 0.879 0.858 0.868 0.873 0.879	910	0.824	0.821		0.826	0.825
0.853 0.853 0.855 0.855 0.855 0.859 0.857 0.855 0.864 0.857 0.867 0.852 0.856 0.862 0.873 0.858 0.845 0.853 0.873 0.844 0.866 0.873 0.879 0.858 0.868 0.873 0.879	915	0.837	0.828		0.844	0.818
0.859 0.855 0.864 0.857 0.867 0.852 0.856 0.862 0.850 0.873 0.858 0.845 0.853 0.873 0.877 0.844 0.866 0.873 0.879 0.858 0.863 0.873 0.879	920	0.853	0.853		0.855	0.851
0.857 0.862 0.852 0.856 0.862 0.850 0.873 0.858 0.845 0.853 0.877 0.877 0.844 0.866 0.873 0.879 0.858 0.869 0.873 0.879	925	0.859	0.855		0.864	0.857
0.862 0.850 0.873 0.858 0.845 0.853 0.873 0.877 0.844 0.866 0.873 0.879 0.858 0.863 0.881 0.874	086	0.857	0.867		0.856	0.858
0.845 0.853 0.873 0.877 0.844 0.866 0.873 0.879 0.858 0.863 0.881 0.874	935	0.862	0.850		0.858	0.833
0.844 0.866 0.873 0.879 0.858 0.863 0.881 0.874	940	0.845	0.853		0.877	0.854
0.858 0.863 0.881 0.874	945	0.844	0.866		0.879	0.833
	056	0.858	0.863		0.874	0.856

	CARY 5G SPECT	RAPHOTOM	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	, AFB (AL/OEO)	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.787	0.785	181.0	0.782	0.784
455	0.790	0.788	0.792	0.784	0.786
460	0.791	0.789	0.793	0.785	0.788
465	0.799	0.797	0.799	0.793	0.796
470	0.805	0.804	908.0	0.800	0.803
475	0.805	0.804	908.0	0.799	0.801
480	0.804	0.802	508.0	0.799	0.800
485	0.809	0.808	0.810	0.805	0.807
490	0.817	0.815	0.817	0.812	0.813
495	0.817	0.815	0.818	0.811	0.813
200	0.815	0.813	0.815	0.808	0.811
505	0.815	0.814	0.815	0.811	0.812
510	0.821	0.819	0.821	0.816	0.817
515	0.824	0.821	0.824	0.818	0.820
520	0.821	0.819	0.822	0.815	0.817
525	0.819	0.816	0.819	0.813	0.815
530	0.820	0.818	0.821	0.816	0.817
535	0.826	0.824		0.820	0.822
540	0.827	0.826	0.828	0.822	0.823
545	0.825	0.823	0.826	0.818	0.821
550	0.820	0.819	0.821	0.814	0.816
555	0.819	0.818	0.819	0.814	0.816
260	0.823	0.821	0.824	0.819	0.820
292	0.828	0.826	0.827	0.822	0.824
270	0.829	0.827			0.825
575	0.827	0.825			0.824
580		0.823		0.819	0.822
585	0.825	0.823		0.819	0.822
590	0.828	0.826	0.828	0.824	0.826
595	0.832	0.830	0.832	0.827	0.829
009	0.834	0.832	0.835	0.829	0.832
605	0.835	0.833			0.831
610		0.832			0.831
615	0.835	0.833	0.836	0.830	0.833

wavelength Rep. 2 Rep. 3 Rep. 4 Rep. 5 (nm) (trans) (trans) (trans) (trans) (20) 0.834 0.834 0.834 0.848 620 0.844 0.849 0.848 0.841 620 0.834 0.834 0.834 0.848 630 0.851 0.844 0.848 0.848 630 0.854 0.854 0.848 0.848 640 0.854 0.857 0.851 0.851 640 0.856 0.857 0.851 0.852 640 0.856 0.857 0.851 0.852 640 0.856 0.857 0.851 0.852 650 0.856 0.856 0.856 0.856 0.856 660 0.861 0.853 0.867 0.866 0.866 660 0.862 0.862 0.866 0.866 0.866 670 0.873 0.867 0.867		CARY 5G SPEC	TRAPHOTOM	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	AFB (AL/OEO)	
Rep. 1 Rep. 2 Rep. 3 Rep. 4 1 (trans.)				SAMPLE 2		
(trans.) (trans.)	wavelength	Rep. 1			Rep. 4	Rep. 5
0.838 0.836 0.834 0.834 0.844 0.842 0.844 0.839 0.854 0.851 0.848 0.835 0.854 0.854 0.848 0.848 0.856 0.855 0.857 0.851 0.856 0.856 0.856 0.856 0.858 0.865 0.867 0.867 0.858 0.867 0.865 0.867 0.870 0.870 0.867 0.867 0.871 0.872 0.867 0.867 0.872 0.867 0.867 0.867 0.873 0.873 0.867 0.864 0.874 0.873 0.864 0.864 0.873 0.866 0.867 0.866 0.874 0.873 0.864 0.864 0.875 0.874 0.873 0.873 0.874 0.874 0.864 0.864 0.875 0.874 0.874 0.874 0.874 0.	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.844 0.842 0.844 0.839 0.851 0.851 0.851 0.845 0.854 0.851 0.851 0.851 0.856 0.855 0.857 0.851 0.856 0.855 0.857 0.852 0.857 0.856 0.855 0.856 0.870 0.863 0.865 0.866 0.870 0.870 0.867 0.867 0.871 0.872 0.867 0.867 0.872 0.873 0.867 0.867 0.873 0.873 0.867 0.867 0.873 0.873 0.867 0.864 0.874 0.873 0.864 0.864 0.875 0.874 0.864 0.864 0.874 0.875 0.864 0.864 0.875 0.873 0.864 0.864 0.874 0.874 0.864 0.864 0.875 0.872 0.873 0.864 0.872 0.	620	0.838	0.836		0.834	0.836
0.851 0.847 0.850 0.845 0.854 0.851 0.851 0.848 0.856 0.857 0.851 0.851 0.856 0.857 0.851 0.851 0.857 0.854 0.852 0.852 0.858 0.856 0.856 0.866 0.861 0.862 0.866 0.867 0.870 0.873 0.867 0.867 0.870 0.873 0.867 0.867 0.870 0.873 0.867 0.867 0.870 0.868 0.867 0.867 0.870 0.868 0.867 0.864 0.870 0.868 0.867 0.868 0.871 0.872 0.869 0.866 0.872 0.873 0.874 0.864 0.874 0.875 0.869 0.866 0.875 0.872 0.869 0.866 0.874 0.874 0.874 0.864 0.875 0.	625	0.844	0.842	0.844	0.839	0.841
0.854 0.851 0.854 0.851 0.856 0.855 0.857 0.851 0.856 0.855 0.857 0.851 0.857 0.851 0.852 0.852 0.858 0.856 0.855 0.852 0.861 0.852 0.865 0.865 0.870 0.863 0.865 0.865 0.873 0.873 0.867 0.867 0.873 0.873 0.867 0.865 0.873 0.873 0.865 0.865 0.874 0.873 0.864 0.865 0.875 0.867 0.867 0.864 0.868 0.867 0.867 0.866 0.878 0.875 0.865 0.879 0.879 0.864 0.871 0.872 0.869 0.872 0.872 0.866 0.873 0.874 0.866 0.874 0.872 0.869 0.872 0.873 0.866<	630	0.851	0.847	0.850	0.845	0.848
0.856 0.855 0.857 0.851 0.856 0.855 0.857 0.850 0.857 0.854 0.852 0.852 0.858 0.856 0.855 0.852 0.861 0.855 0.865 0.865 0.862 0.863 0.865 0.865 0.870 0.873 0.867 0.867 0.873 0.871 0.873 0.864 0.873 0.871 0.873 0.864 0.873 0.867 0.864 0.864 0.874 0.867 0.864 0.864 0.875 0.873 0.864 0.864 0.874 0.875 0.873 0.864 0.877 0.875 0.873 0.873 0.875 0.874 0.875 0.864 0.875 0.875 0.864 0.865 0.871 0.872 0.873 0.873 0.871 0.873 0.873 0.873 0.880 0.	635	0.854	0.851	0.854	0.848	0.851
0.856 0.855 0.857 0.857 0.850 0.857 0.858 0.852 0.852 0.861 0.859 0.858 0.852 0.861 0.859 0.863 0.865 0.865 0.863 0.865 0.866 0.870 0.871 0.873 0.867 0.873 0.873 0.867 0.867 0.873 0.873 0.867 0.867 0.873 0.873 0.864 0.864 0.874 0.874 0.873 0.864 0.874 0.874 0.864 0.864 0.874 0.875 0.864 0.864 0.875 0.875 0.873 0.873 0.874 0.875 0.874 0.866 0.875 0.874 0.875 0.866 0.874 0.875 0.879 0.866 0.873 0.873 0.873 0.873 0.880 0.864 0.864 0.866 0.866	640	0.856	0.855		0.851	0.853
0.857 0.854 0.857 0.856 0.858 0.858 0.855 0.861 0.863 0.865 0.865 0.863 0.865 0.870 0.873 0.865 0.873 0.873 0.867 0.873 0.871 0.873 0.867 0.872 0.873 0.873 0.867 0.873 0.870 0.873 0.867 0.874 0.873 0.867 0.864 0.878 0.867 0.864 0.864 0.878 0.867 0.869 0.864 0.879 0.879 0.873 0.872 0.871 0.872 0.873 0.873 0.874 0.875 0.874 0.864 0.864 0.865 0.866 0.866 0.871 0.872 0.865 0.866 0.873 0.873 0.873 0.873 0.873 0.873 0.874 0.874 0.883 0.883<	645	0.856	0.855		0.851	0.853
0.858 0.856 0.858 0.852 0.861 0.863 0.864 0.865 0.865 0.863 0.866 0.866 0.870 0.873 0.867 0.867 0.873 0.871 0.873 0.867 0.872 0.870 0.873 0.866 0.873 0.870 0.873 0.867 0.874 0.873 0.867 0.864 0.879 0.863 0.864 0.864 0.878 0.867 0.869 0.864 0.879 0.879 0.879 0.879 0.871 0.872 0.873 0.872 0.874 0.875 0.872 0.864 0.871 0.874 0.865 0.866 0.864 0.865 0.866 0.866 0.875 0.876 0.866 0.866 0.871 0.872 0.873 0.874 0.873 0.873 0.873 0.874 0.880 0.	059	0.857	0.854	0.857	0.850	0.854
0.861 0.859 0.861 0.855 0.865 0.863 0.865 0.860 0.870 0.870 0.868 0.865 0.873 0.870 0.873 0.867 0.873 0.871 0.867 0.866 0.872 0.873 0.867 0.866 0.873 0.870 0.864 0.864 0.869 0.869 0.869 0.864 0.869 0.869 0.864 0.864 0.876 0.877 0.864 0.864 0.876 0.877 0.873 0.864 0.877 0.878 0.879 0.864 0.877 0.877 0.872 0.866 0.877 0.872 0.873 0.866 0.871 0.872 0.866 0.866 0.872 0.869 0.866 0.866 0.873 0.873 0.874 0.874 0.880 0.881 0.875 0.875 0.881 0.	655	0.858	0.856		0.852	0.854
0.865 0.865 0.865 0.866 0.870 0.871 0.867 0.867 0.873 0.871 0.872 0.867 0.873 0.871 0.872 0.867 0.872 0.873 0.867 0.866 0.870 0.873 0.864 0.864 0.869 0.869 0.869 0.864 0.868 0.869 0.864 0.864 0.870 0.873 0.874 0.864 0.874 0.875 0.873 0.866 0.875 0.875 0.873 0.873 0.874 0.875 0.873 0.873 0.875 0.875 0.873 0.866 0.877 0.874 0.866 0.866 0.874 0.875 0.866 0.866 0.874 0.875 0.866 0.866 0.871 0.872 0.873 0.874 0.880 0.881 0.875 0.875 0.883 0.	099	0.861	0.859		0.855	0.858
0.870 0.867 0.868 0.867 0.873 0.870 0.873 0.867 0.873 0.871 0.872 0.867 0.872 0.867 0.867 0.866 0.872 0.867 0.866 0.866 0.873 0.867 0.864 0.864 0.868 0.869 0.864 0.864 0.876 0.877 0.875 0.873 0.876 0.877 0.877 0.878 0.877 0.878 0.875 0.866 0.877 0.877 0.878 0.865 0.877 0.872 0.866 0.866 0.871 0.872 0.866 0.866 0.872 0.874 0.866 0.866 0.874 0.866 0.866 0.866 0.871 0.872 0.873 0.874 0.871 0.872 0.873 0.874 0.880 0.881 0.875 0.881 0.875 0.	999	0.865	0.863	98.0	098.0	0.862
0.873 0.870 0.872 0.867 0.873 0.871 0.872 0.866 0.872 0.873 0.864 0.864 0.870 0.868 0.870 0.864 0.869 0.867 0.863 0.864 0.869 0.867 0.864 0.864 0.870 0.868 0.864 0.864 0.870 0.872 0.864 0.866 0.871 0.872 0.873 0.873 0.872 0.873 0.873 0.866 0.873 0.874 0.865 0.866 0.874 0.875 0.866 0.866 0.874 0.876 0.866 0.866 0.873 0.872 0.873 0.873 0.874 0.874 0.874 0.874 0.873 0.873 0.873 0.873 0.880 0.881 0.874 0.874 0.881 0.882 0.874 0.874 0.880 0.	029	0.870	0.867		0.865	0.866
0.873 0.871 0.872 0.866 0.872 0.873 0.866 0.864 0.870 0.868 0.873 0.864 0.869 0.867 0.863 0.863 0.869 0.867 0.864 0.864 0.870 0.868 0.867 0.864 0.870 0.873 0.873 0.866 0.871 0.872 0.873 0.873 0.872 0.873 0.873 0.873 0.873 0.874 0.866 0.866 0.874 0.875 0.872 0.865 0.875 0.874 0.866 0.866 0.874 0.866 0.866 0.866 0.873 0.874 0.873 0.870 0.874 0.873 0.874 0.874 0.880 0.874 0.874 0.875 0.881 0.881 0.875 0.875 0.881 0.881 0.875 0.880 0.881 0.	675	0.873	0.870		0.867	698.0
0.872 0.870 0.873 0.866 0.870 0.868 0.870 0.864 0.869 0.867 0.869 0.863 0.868 0.867 0.863 0.864 0.868 0.867 0.864 0.864 0.870 0.868 0.877 0.866 0.871 0.873 0.878 0.873 0.872 0.873 0.878 0.873 0.873 0.878 0.873 0.873 0.874 0.878 0.865 0.875 0.878 0.866 0.876 0.879 0.865 0.871 0.872 0.873 0.872 0.873 0.866 0.873 0.874 0.874 0.874 0.873 0.874 0.880 0.874 0.875 0.881 0.881 0.875 0.881 0.881 0.875 0.880 0.881 0.875	089	0.873	0.871		0.867	0.869
0.870 0.868 0.870 0.864 0.869 0.867 0.869 0.863 0.868 0.866 0.868 0.864 0.868 0.867 0.864 0.864 0.870 0.867 0.866 0.866 0.871 0.873 0.873 0.873 0.872 0.873 0.873 0.872 0.871 0.872 0.873 0.865 0.872 0.873 0.865 0.865 0.873 0.874 0.865 0.865 0.874 0.865 0.865 0.866 0.873 0.874 0.873 0.870 0.873 0.874 0.873 0.874 0.880 0.873 0.874 0.875 0.881 0.881 0.875 0.875 0.883 0.880 0.881 0.875 0.880 0.881 0.874 0.875	685	0.872	0.870		998.0	0.868
0.869 0.867 0.869 0.863 0.868 0.866 0.868 0.864 0.868 0.867 0.867 0.864 0.870 0.872 0.876 0.866 0.876 0.877 0.873 0.873 0.877 0.875 0.878 0.872 0.871 0.872 0.874 0.868 0.871 0.872 0.874 0.868 0.871 0.872 0.874 0.865 0.872 0.874 0.865 0.866 0.873 0.864 0.865 0.866 0.874 0.873 0.870 0.870 0.873 0.874 0.873 0.874 0.880 0.873 0.875 0.875 0.881 0.881 0.875 0.875 0.883 0.881 0.875 0.875 0.879 0.880 0.881 0.875	069	0.870	0.868		0.864	0.866
0.868 0.866 0.864 0.864 0.868 0.867 0.867 0.864 0.870 0.868 0.870 0.866 0.876 0.873 0.875 0.866 0.877 0.873 0.873 0.873 0.877 0.875 0.872 0.872 0.871 0.872 0.874 0.868 0.873 0.874 0.865 0.865 0.874 0.864 0.865 0.866 0.871 0.864 0.865 0.866 0.871 0.864 0.865 0.866 0.871 0.872 0.873 0.870 0.873 0.874 0.873 0.874 0.880 0.881 0.875 0.875 0.881 0.882 0.875 0.875 0.880 0.881 0.875 0.874 0.879 0.880 0.881 0.875	695	0.869	0.867		0.863	0.866
0.868 0.867 0.864 0.870 0.868 0.870 0.866 0.876 0.873 0.875 0.869 0.878 0.878 0.873 0.873 0.878 0.877 0.873 0.873 0.877 0.878 0.873 0.873 0.871 0.874 0.868 0.865 0.866 0.867 0.866 0.866 0.871 0.864 0.865 0.866 0.872 0.873 0.870 0.870 0.873 0.874 0.873 0.874 0.880 0.873 0.874 0.874 0.881 0.873 0.874 0.875 0.881 0.881 0.875 0.875 0.883 0.881 0.875 0.875 0.880 0.881 0.875 0.875 0.879 0.880 0.881 0.875	700	0.868	0.866		0.864	0.866
0.870 0.868 0.870 0.866 0.876 0.873 0.875 0.869 0.873 0.876 0.873 0.872 0.877 0.876 0.872 0.872 0.877 0.877 0.878 0.868 0.871 0.870 0.865 0.865 0.866 0.864 0.865 0.860 0.871 0.872 0.873 0.870 0.873 0.874 0.873 0.874 0.880 0.874 0.877 0.875 0.881 0.880 0.875 0.875 0.881 0.880 0.881 0.875 0.883 0.880 0.881 0.875 0.879 0.881 0.875	705	0.868	0.867		0.864	0.865
0.876 0.873 0.875 0.869 0.878 0.878 0.873 0.877 0.875 0.878 0.872 0.875 0.874 0.868 0.868 0.871 0.870 0.865 0.865 0.866 0.864 0.865 0.860 0.871 0.872 0.873 0.870 0.873 0.873 0.873 0.873 0.873 0.874 0.873 0.874 0.880 0.880 0.874 0.875 0.881 0.880 0.887 0.875 0.883 0.880 0.881 0.875 0.883 0.880 0.881 0.875 0.879 0.879 0.875 0.875	710	0.870	0.868		0.866	0.867
0.878 0.876 0.873 0.873 0.877 0.875 0.878 0.872 0.875 0.874 0.868 0.868 0.871 0.870 0.870 0.865 0.866 0.866 0.866 0.860 0.871 0.872 0.873 0.870 0.873 0.873 0.873 0.873 0.874 0.877 0.874 0.874 0.880 0.880 0.875 0.875 0.881 0.882 0.875 0.875 0.883 0.880 0.881 0.875 0.880 0.881 0.875 0.875 0.880 0.881 0.875 0.875	715	0.876	0.873	0.875	0.869	0.872
0.877 0.875 0.878 0.872 0.875 0.872 0.874 0.868 0.871 0.870 0.870 0.865 0.866 0.864 0.865 0.861 0.871 0.869 0.866 0.866 0.873 0.873 0.870 0.874 0.873 0.873 0.880 0.874 0.874 0.881 0.875 0.875 0.881 0.875 0.875 0.881 0.875 0.875 0.883 0.881 0.875 0.880 0.881 0.875 0.880 0.881 0.875 0.875 0.875 0.875	720	0.878	0.876		0.873	0.874
0.875 0.872 0.874 0.868 0.871 0.870 0.865 0.865 0.866 0.864 0.866 0.861 0.871 0.869 0.869 0.866 0.873 0.872 0.873 0.870 0.877 0.874 0.873 0.873 0.880 0.878 0.874 0.874 0.881 0.879 0.874 0.882 0.875 0.883 0.886 0.875 0.883 0.886 0.875 0.883 0.881 0.875 0.883 0.885 0.875 0.875 0.875 0.875	725	0.877	0.875		0.872	0.873
0.871 0.870 0.870 0.865 0.866 0.864 0.865 0.861 0.866 0.864 0.865 0.860 0.871 0.869 0.865 0.866 0.873 0.873 0.870 0.874 0.877 0.873 0.880 0.879 0.874 0.881 0.875 0.875 0.883 0.881 0.875 0.883 0.881 0.875 0.883 0.881 0.875 0.883 0.885 0.875 0.883 0.887 0.875	730	0.875	0.872		0.868	0.872
0.866 0.864 0.866 0.861 0.866 0.864 0.865 0.860 0.871 0.869 0.869 0.866 0.873 0.873 0.870 0.874 0.877 0.873 0.880 0.879 0.874 0.881 0.874 0.875 0.883 0.881 0.875 0.883 0.882 0.876 0.880 0.881 0.876 0.880 0.881 0.876 0.875 0.876	735	0.871	0.870		0.865	0.866
0.866 0.864 0.865 0.860 0.871 0.869 0.869 0.866 0.873 0.877 0.870 0.877 0.873 0.873 0.880 0.874 0.873 0.881 0.874 0.874 0.881 0.882 0.875 0.883 0.882 0.876 0.880 0.882 0.876 0.880 0.881 0.876 0.880 0.881 0.875 0.880 0.881 0.874	740	0.866	0.864		0.861	0.862
0.871 0.869 0.869 0.866 0.873 0.872 0.873 0.870 0.877 0.877 0.873 0.873 0.880 0.878 0.874 0.874 0.881 0.889 0.881 0.875 0.882 0.883 0.876 0.875 0.875 0.875 0.875 0.875	745	0.866	0.864		098.0	0.862
0.873 0.872 0.873 0.870 0.877 0.874 0.877 0.873 0.880 0.879 0.874 0.881 0.875 0.875 0.883 0.881 0.875 0.880 0.882 0.876 0.880 0.881 0.875 0.875 0.875	750	0.871	0.869		0.866	0.868
0.877 0.874 0.877 0.873 0.880 0.879 0.874 0.881 0.875 0.875 0.883 0.880 0.875 0.880 0.881 0.876 0.880 0.881 0.876 0.875 0.875 0.875	755	0.873	0.872	0.873	0.870	0.870
0.880 0.878 0.879 0.874 0.881 0.881 0.875 0.883 0.882 0.876 0.880 0.881 0.876 0.880 0.881 0.876 0.875 0.875	092	0.877	0.874		0.873	0.874
0.881 0.880 0.881 0.875 0.883 0.880 0.882 0.876 0.880 0.880 0.875 0.875 0.875	765	0.880	0.878		0.874	0.877
0.883 0.880 0.882 0.876 0.880 0.881 0.875 0.879 0.879 0.879	770	0.881	0.880		0.875	0.878
0.880 0.881 0.875 0.879 0.879 0.879	775	0.883	0.880		0.876	0.878
0.879 0.880 0.874	780	0.880	0.880		0.875	0.877
	785	0.879	0.879		0.874	0.875

)	CARY 5G SPECT	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	ER - BROOKS,	AFB (AL/OEO)	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790	0.877	0.876	0.877	0.871	0.875
795	0.876	0.875	0.875	0.870	0.872
800	0.875	0.872	0.873	0.870	0.872
805	0.875	0.871	0.875	0.870	0.871
810	0.875	0.871	0.873	0.871	0.874
815	0.878	0.876	0.877	0.872	0.873
820	0.880	0.879	0.880	0.875	0.876
825	0.881	0.879	0.879	0.877	0.879
830	0.885	0.881	0.883	0.879	0.878
835	0.880	0.880	0.881	0.876	0.878
840	0.879	0.876	0.879	0.876	0.876
845	0.874	0.874	0.877	0.869	0.873
820	0.867	0.864	0.872	0.860	0.864
855	0.858	0.860	0.861	0.849	0.855
098	0.843	0.843	0.839	0.838	0.841
865	0.822	0.820	0.824	0.815	0.819
870	0.813	0.815	0.812	0.816	0.815
875	0.833	0.830	0.833	0.828	0.829
088	0.845	0.842	0.845	0.840	0.841
885	0.851	0.846	0.849	0.846	0.847
068	0.846	0.843	0.845	0.842	0.843
895	0.838	0.834	0.835	0.833	0.834
006	0.823	0.820	0.820	0.818	0.818
905	0.805	0.803	0.804	0.800	0.801
910	0.804	0.801	0.804	0.799	0.801
915	0.830	0.826	0.828	0.825	0.828
920	0.850	0.848	0.850	0.843	0.845
925	0.858	0.857	0.860	0.854	0.857
930	0.864	0.862	0.864	0.858	0.861
935	0.867	0.863	0.866	0.860	0.863
940	0.868	998.0	0.866	0.862	0.864
945	0.869	998.0	0.868	0.863	0.865
950	0.869	998.0	898.0	0.863	0.864

[P]	ERKIN ELMER	LAMBDA 9 - 1	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	AL/OEO)	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.778	0.777	0.771	0.775	0.772
455	0.779	0.778	0.773	0.776	0.773
460	0.782	0.781	922.0	0.779	0.774
465	0.791	0.788	0.784	0.787	0.783
470	0.795	0.794	0.788	0.793	0.788
475	0.793	0.793	0.786	0.791	0.787
480	0.795	0.793	0.788	0.791	0.787
485	0.802	0.799	0.795	0.798	0.794
490	0.807	908'0	0.800	0.804	0.799
495	0.805	0.805	0.799	0.803	0.799
200	0.804	0.803	161.0	0.801	0.797
505	0.807	0.805	0.800	0.803	0.799
510	0.813	0.810	0.805	0.809	0.804
515	0.813	0.812	0.805	0.810	0.806
520	0.810	0.809	0.803	0.807	0.803
525	0.809	0.807	0.802	908.0	0.801
530	0.813	0.810	0.805	0.80	0.805
535	0.817	0.815	0.810	0.813	0.809
540	0.818	0.816	0.810	0.815	0.810
545	0.814	0.813	0.806	0.811	0.807
550	0.811	0.80	0.803	0.807	0.804
555	0.811	0.810		0.808	0.804
260	0.816	0.814	0.80	0.812	0.808
595	0.820	0.818		0.816	0.812
570	0.820	0.818		0.817	0.813
575	0.817	0.816		0.815	0.811
280	0.816	0.815	0.809	0.813	0.800
585	0.818	0.816	0.811	0.815	0.810
290	0.822	0.820	0.815	0.818	0.815
595	0.826	0.824	0.819	0.823	0.818
009	0.827	0.825		0.824	0.820
909	0.827	0.825		0.824	0.820
610	0.826	0.825		0.824	0.820
615	0.828	0.826	0.821	0.825	0.821

	PERKIN ELMER	LAMBDA 9 -]	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	/OEO)	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.833	0.831	0.826	0.829	0.826
625		0.837	0.833	0.836	0.832
630		0.843	0.838	0.841	0.837
635		0.847	0.841	0.845	0.841
640		0.848	0.843	0.847	0.843
645	0.850	0.848	0.842	0.847	0.843
650	0.850	0.849	0.844	0.847	0.844
655	0.853	0.851	0.846	0.849	0.846
099		0.854	0.850	0.854	0.850
999		0.859	0.855	0.858	0.854
029		0.863	0.859	0.862	0.858
675	0.867	0.865	098.0	0.864	0.860
089	998.0	998:0	098'0	0.864	098.0
685	0.865	0.864	0.859	0.863	0.859
069	0.864	0.863	0.857	0.861	0.858
695	0.864	0.862	0.857	0.861	0.857
700		0.862	0.858	0.862	0.857
705		0.863	0.859	0.862	0.858
710		0.865	0.862	0.864	0.860
715		0.870	0.866	698.0	0.865
720		0.872	0.867	0.871	0.867
725		0.871	998.0	0.870	0.866
730		0.869	0.863	0.867	0.863
735		0.864	098.0	0.863	0.859
740		0.860	0.856	0.859	0.856
745		0.861	0.857	0.861	0.856
750		0.866	0.863	998.0	0.862
755	0.873	0.870	0.867	0.869	0.866
760	0.877	0.874	0.871	0.873	0.869
765		0.877	0.873	0.876	0.872
770		0.878	0.875	0.877	0.873
775		0.878	0.874	0.877	0.873
780		0.877	0.874	0.876	0.873
785	0.877	0.875	0.871	0.874	0.871

<u>a</u>	ERKIN ELMER	LAMBDA 9 - BI	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	/OEO)	
		S.	SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
190	0.875	0.873	0.870	0.872	0.869
795	0.874	0.872	0.867	0.871	0.867
800	0.873	0.871	0.868	0.870	0.866
802	0.873	0.871	0.869	0.871	0.867
810	0.875	0.873	0.870	0.872	0.869
815	0.878	0.875	0.873	0.875	0.871
820	0.880	0.878	0.875	0.877	0.874
825	0.881	0.880	0.878	0.879	0.875
830	0.882	0.881	0.878	0.881	0.878
835	0.880	0.881	0.879	0.880	0.879
840	0.878	0.880	0.878	0.880	0.879
845	0.876	0.878	0.878	0.878	0.878
820	698.0	0.871	0.872	0.873	0.873
855	0.855	0.861	0.862	0.861	0.863
098	0.845	0.842	0.844	0.844	0.845
865	0.848	0.826	0.797	0.818	0.787
870	0.839	0.816	0.788	0.809	0.778
875	0.849	0.826	0.798	0.819	0.788
880	0.864	0.840	0.811	0.833	0.801
885	0.871	0.847	0.819	0.841	0.808
890	0.870	0.847	0.818	0.839	0.807
895	0.862	0.840	0.812	0.832	0.800
006	0.848	0.826	0.798	0.818	0.787
905	0.829	0.808	0.781	0.800	0.769
910	0.814	0.793	0.766	0.785	0.756
915	0.840	0.818	0.790	0.811	0.781
920	0.864	0.842	0.813	0.834	0.803
925	0.876	0.854	0.825	0.846	0.815
930	0.882	0.860	0.831	0.852	0.820
935	0.885	0.862	0.833	0.854	0.823
940	9880	0.864	0.836	0.856	0.825
945	0.888	0.865	0.837	0.857	0.825
950	0.888	0.866	0.837	0.858	0.827

	HITACHI U-200	0 - POLYCAST	TECHNOLOGY	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	
		97	SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	62.0	0.79	0.788	0.792	0.781
455	0.792	0.792	0.79	0.795	0.783
460	0.794	0.794	0.791	0.796	0.784
465	0.801	0.801	0.798	0.804	0.791
470	0.807	0.807	0.805	0.809	0.797
475	0.807	908.0	0.804	0.808	0.797
480	908.0	0.805	0.802	0.807	0.796
485	0.811	0.811	0.808	0.814	0.801
490	0.818	0.818	0.815	0.82	0.807
495	0.819	0.817	0.816	0.82	0.808
200	0.816	0.815	0.813	0.817	0.806
202	0.816	0.817	0.814	0.819	0.807
510	0.821	0.821	0.819	0.824	0.812
515		0.824	0.821	0.826	0.814
520	0.823	0.821	0.819	0.823	0.812
525	0.82	0.819	0.816	0.821	0.806
530	0.82	0.821	0.818	0.823	0.811
535	0.826	0.825	0.821	0.827	0.815
540	0.828	0.826	0.824	0.829	0.817
545	0.825	0.823	0.821	0.825	0.814
250	0.821	0.819	0.817	0.821	0.81
555		0.819	0.816	0.821	0.81
260		0.823	0.82	0.825	0.813
565		0.826	0.824	0.829	0.817
570	0.829	0.827	0.825	0.83	0.819
575			0.824	0.828	0.817
580				0.826	0.815
585	0.826	0.824	0.821	0.826	0.816
590	0.829	0.828	`	0.83	0.818
595				0.834	0.821
009				0.836	0.824
605	0.836	0.833	0.831	0.836	0.824
610			0.831	0.835	0.823
615	0.836	0.834	0.832	0.836	0.824

1	HITACHI U-2000	- POLYCAST	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	ORPORATION	
		92	SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.839	0.838	0.835	0.84	0.828
625	0.844	0.843	0.84	0.846	0.832
930	0.85	0.843	0.845	0.851	0.838
635	0.855	0.853	0.85	0.856	0.843
640	0.857	0.854	0.853	0.858	0.845
645	0.857	0.855	0.853	0.858	0.845
059	0.857	0.855	0.853	0.858	0.845
655	0.859	0.857	0.854	98.0	0.847
099	0.861	0.86	0.857	0.863	0.85
599	998.0	0.865	0.861	0.868	0.854
029	698.0	0.868	0.865	0.872	0.857
912	0.872	0.871	0.868	0.874	0.86
089	0.872	0.871	0.868	0.874	0.861
589	0.872	0.87	0.868	0.873	0.86
069	0.871	0.869	0.866	0.872	0.858
569	698.0	0.868	0.865	0.87	0.857
200	0.869	0.868	0.864	0.87	0.857
705	0.868	0.868	0.865	0.87	0.857
710	0.871	0.87	998.0	0.872	0.859
715	0.875	0.875	0.871	0.877	0.864
720	0.877	0.877	0.874	0.88	0.866
725	0.877	0.876	0.874	0.879	0.866
730	0.875	0.874	0.871	0.876	0.864
735	0.871	0.869	0.867	0.872	0.86
740	0.868	0.866	0.863	0.868	0.856
745	998.0	0.865	0.863	0.867	0.854
750	0.871	0.871	898.0	0.873	0.86
755	. 0.875	0.874	0.872	0.877	0.864
092	0.877	0.877	0.875	0.88	0.866
765	0.881	0.88	0.877	0.883	0.869
170	0.882	0.882	0.879	0.885	0.872
775	0.883	0.883	0.88	0.885	0.872
780	0.882	0.882	0.879	0.885	0.872
785	0.881	0.88	0.877	0.883	0.871

	HITACHI U.200	0 - POLYCAST	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	ORPORATION	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790		0.877	0.876	0.881	0.869
795	0.877	0.877		0.879	0.867
800		0.875		0.877	0.866
805		0.875	0.873	0.877	0.865
810	0.876	0.877	0.874	0.879	0.866
815		0.879	0.875	0.881	0.868
820		0.881	0.877	0.884	0.871
825		0.882	0.879	0.885	0.872
830		0.883	0.881	0.886	0.873
835		0.882	0.88	0.885	0.872
840		0.881	0.878	0.884	0.871
845		0.877	0.875	0.88	0.867
850			898.0	0.872	0.86
855			0.857	0.862	0.85
098)	0.842	0.847	0.835
865	0.824		0.821	0.826	0.815
870			0.816	0.822	0.81
875			0.834	0.839	0.827
880			0.847	0.851	0.839
885	0.854		0.851	0.857	0.844
890				0.853	0.84
895				0.844	0.832
006				0.829	0.816
905	0.8	0.805		608.0	0.797
910		0.798	0.797	0.801	0.79
915		0.833	0.832	0.836	0.825
920		0.852	0.85	0.855	0.843
925		0.861	98.0	0.865	0.853
930		0.866	0.865	0.869	0.857
935		0.868		0.872	0.86
940				0.873	0.861
945	0.873			0.874	0.862
950				0.873	0.861

0	PTRONICS MO	OPTRONICS MODEL 736 RADIOMETER -		TEXSTAR, INC.	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.806	0.819	0.801	0.807	0.802
455	0.819	0.828	0.810	0.817	0.812
460	0.830	0.843	0.816	0.821	0.816
465	• 0.830	0.837	0.828	0.832	0.828
470	0.834	0.840	0.827	0.834	0.827
475	0.838	0.844	0.828	0.835	0.828
480	0.840	0.846	0.829	0.835	0.828
485	0.838	0.845	0.831	0.838	0.828
490	0.844	0.847	0.835	0.842	0.834
495	0.844	0.850	0.838	0.844	0.840
200	0.844	0.851	0.838	0.844	0.839
202	0.843	0.847	0.836	0.842	0.832
510	0.845	0.849	0.838	0.842	0.834
515	0.849	0.851	0.841	0.846	0.839
520	0.851	0.852	0.841	0.846	0.840
525	0.845	0.849	0.836	0.841	0.836
530	0.846	0.849	0.835	0.841	0.837
535	0.847	0.850	0.838	0.843	0.837
540	0.849	0.854	0.841	0.846	0.840
545	0.849	0.852	0.840	0.844	0.840
550	0.847	0.849	0.837	0.843	0.840
555	0.844	0.846	0.834	0.839	0.839
260	0.844	0.846	0.834	0.841	0.844
595	0.848	0.850	0.838	0.845	0.847
270	0.849	0.852	0.839	0.846	0.843
575	0.851	0.855	0.840	0.847	0.844
280	0.849	0.853	0.837	0.846	0.844
585	0.847	0.851	0.836	0.844	0.844
290	0.849	0.852	0.838	0.844	0.846
595	0.852	0.855	0.841	0.847	0.850
009	0.857	0.859	0.844	0.852	0.856
905	0.856	098.0	0.845	0.853	0.856
610	0.857	098.0	0.844	0.852	0.857
615	098.0	0.862	0.847	0.855	0.861

	OPTRONICS MODEL 736 RADIOMETER -	DEL 736 RAD		TEXSTAR, INC.	
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.864	0.866	0.851	098.0	0.865
625	698.0	0.871	0.855	0.865	0.869
630	0.875	0.875		0.869	0.875
635	0.880	0.882	998.0	0.875	0.881
640	0.884	0.885	698.0	0.877	0.883
645	0.884	0.886	0.870	0.877	0.885
059	0.884	0.885	0.870	0.877	0.886
655	0.887	0.886	0.871	0.879	0.888
099	0.889	0.888	0.874	0.880	0.890
999	0.891	0.890	0.877	0.883	0.894
0.09	0.895	0.895	0.879	0.887	0.896
675	0.899	0.898	0.884	0.890	0.899
089	0.901	0.900	0.887	0.891	0.903
685	0.900	0.900	988.0	0.891	0.901
069	0.905	006'0		0.891	0.903
695	0.900	0.899	0.885	0.890	0.901
700	0.897	0.897		0.888	0.897
705	0.895	0.896		0.885	0.896
710	0.897	0.898	0.883	0.888	0.897
715	0.903	0.902		0.891	0.900
720	906.0	0.907		968:0	0.905
725	0.903	0.903		968.0	0.903
730	0.905	0.906		0.896	0.904
735	0.902	0.901		0.891	0.899
740	0.896	0.897		0.886	0.893
745	0.895	0.896	0.880	0.885	0.892
750	0.898	0.902	0.885	0.890	0.897
755	0.900	0.902	0.886	0.893	0.898
760	0.904	0.907		968.0	0.903
765	0.908	0.909		0.000	0.905
770	0.910	0.911		0.902	0.907
775	0.912	0.913		0.904	0.908
780	0.913	0.913		0.904	0.909
785	0.912	0.914	0.897	0.904	0.911

0	PTRONICS MO	OPTRONICS MODEL 736 RADIOMETER -		TEXSTAR,INC.	
		SA	SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
190	0.910	0.910	0.895	0.901	0.909
795	0.909	0.909	0.894	0.899	0.906
800	0.908	0.909	0.893	0.899	0.906
802	0.907	0.907	0.891	0.898	0.904
810	0.908	0.908	0.891	0.897	0.904
815	0.907	0.908	0.891	0.898	0.905
820	0.911	0.909	0.894	0.901	0.907
825	0.914	0.912	0.895	0.903	0.910
830	0.913	0.911	0.895	0.903	0.910
835	0.912	0.911	0.893	0.901	0.908
840	0.912	0.910	0.892	0.902	0.905
845	0.908	906'0	0.890	0.898	0.902
820	0.901	0.897	0.882	0.890	0.896
822	688:0	0.888	0.869	0.878	0.886
098	0.870	0.871	0.852	0.861	0.866
865	0.850	0.850	0.832	0.841	0.844
028	0.846	0.848	0.827	0.836	0.840
875	0.862	0.862	0.842	0.850	0.855
880	0.874	0.874	0.853	0.863	0.867
885	0.879	0.878	0.858	0.867	0.872
068	0.879	0.875	0.856	0.863	0.871
895	998.0	0.867	0.842	0.851	0.859
006	0.846	0.846	0.824	0.832	0.840
905	0.826	0.824	0.803	0.809	0.818
910	0.829	0.828	0.806	0.812	0.821
915	0.859	0.862	0.836	0.843	0.851
920	0.879	0.880	0.857	0.863	0.871
925	0.891	0.891	0.869	0.875	0.883
930	968.0	0.897	0.874	0.880	0.889
935	0.898	0.898	0.876	0.881	0.891
940	0.897	968.0	0.875	0.881	0.890
945	0.899	0.898	0.875	0.884	0.894
950	0.899	0.898	0.876	0.883	0.893

	UV/VIS/NIR SPECTROPHOTOMETER - SIERRACIN/SYLMAR CORP.	CTROPHOTO	METER - SIERR	ACINSYLMAR	CORP.
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.769	0.765	191.0	992.0	0.763
455	0.771	0.767	892'0	0.767	0.764
460	0.774	0.770	0.771	0.770	0.770
465	0.783	0.778	0.781	0.778	0.777
470	0.789	0.784	982'0	0.783	0.779
475	0.787	0.782	0.783	0.782	0.779
480	0.788	0.785	181.0	0.784	0.784
485	962.0	0.792	0.794	0.793	0.792
490	0.801	0.797	0.799	762.0	0.794
495	0.800	0.796	862'0	962'0	0.793
200	0.799	0.795	161.0	0.794	0.793
505	0.802	0.798	0.801	0.798	0.798
510		0.803		0.803	0.802
515	0.800	0.805	0.806	0.804	0.801
520	908.0	0.801	0.804	0.801	0.799
525	0.805	0.801	0.803	0.800	0.800
530	808'0	0.804	0.808	0.805	0.805
535	0.813	0.809	0.812	608.0	0.808
540		0.808	0.811	608.0	0.806
545		0.806		908:0	0.802
550	0.807	0.803	0.805	0.802	0.801
555	0.808	0.804	0.807	0.803	0.804
260		0.808	0.811	0.809	0.809
595	0.815	0.812	0.813	0.812	0.810
570	0.816	0.813	0.814	0.811	0.809
575	0.814	0.810	0.812	0.810	0.808
580	0.813	0.810	0.812	0.809	0.808
585	0.815	0.811	0.813	0.811	0.812
590		0.815	0.817	0.815	0.815
595		0.818		0.818	0.816
009		0.819		0.819	0.817
605		0.819		0.819	0.816
610		0.820		0.819	0.817
615	0.825	0.822	0.824	0.821	0.822

	NO L	V/VIS/NIR SPE	CTROPHOTOME	UV/VIS/NIR SPECTROPHOTOMETER - SIERRACIN/SYLMAR CORP.	IN/SYLMAR C	ORP.
Rep. 1 Rep. 2 Rep. 3 Rep. 4 F. (trans.)			SA	MPLE 2		
(trans.) (trans.)	wavelength	Rep. 1				Rep. 5
0.829 0.826 0.828 0.827 0.835 0.834 0.832 0.832 0.841 0.843 0.838 0.838 0.844 0.843 0.843 0.842 0.846 0.843 0.844 0.842 0.846 0.843 0.844 0.843 0.847 0.848 0.848 0.843 0.849 0.846 0.848 0.843 0.849 0.846 0.848 0.843 0.849 0.846 0.848 0.843 0.853 0.850 0.853 0.853 0.861 0.860 0.860 0.853 0.862 0.860 0.860 0.853 0.861 0.862 0.863 0.865 0.861 0.862 0.866 0.866 0.861 0.862 0.866 0.866 0.862 0.863 0.866 0.866 0.863 0.864 0.865 0.865 0.864 0.	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.835 0.834 0.835 0.841 0.838 0.838 0.838 0.844 0.843 0.842 0.842 0.846 0.843 0.842 0.842 0.846 0.843 0.843 0.843 0.846 0.843 0.843 0.843 0.847 0.846 0.845 0.845 0.853 0.850 0.852 0.851 0.853 0.850 0.852 0.853 0.861 0.862 0.860 0.853 0.863 0.860 0.860 0.853 0.861 0.860 0.860 0.853 0.862 0.860 0.860 0.853 0.863 0.860 0.860 0.864 0.864 0.865 0.860 0.866 0.864 0.865 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.866 0.	620	0.829	0.826	0.828	0.827	0.827
0.841 0.838 0.839 0.838 0.844 0.841 0.842 0.842 0.846 0.843 0.842 0.842 0.846 0.843 0.843 0.843 0.847 0.843 0.843 0.843 0.849 0.844 0.843 0.843 0.849 0.846 0.845 0.843 0.853 0.850 0.854 0.854 0.853 0.850 0.853 0.853 0.861 0.860 0.860 0.853 0.862 0.860 0.860 0.853 0.863 0.860 0.860 0.853 0.861 0.862 0.853 0.853 0.862 0.863 0.860 0.853 0.864 0.865 0.866 0.865 0.864 0.865 0.866 0.865 0.864 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.866 0.	625	0.835	0.832	0.834	0.832	0.833
0.844 0.841 0.843 0.840 0.846 0.843 0.842 0.842 0.846 0.843 0.843 0.843 0.847 0.843 0.843 0.843 0.849 0.849 0.845 0.845 0.853 0.850 0.852 0.853 0.853 0.855 0.856 0.853 0.861 0.862 0.853 0.853 0.863 0.860 0.860 0.853 0.861 0.860 0.853 0.853 0.863 0.860 0.853 0.853 0.861 0.860 0.860 0.853 0.861 0.860 0.860 0.853 0.862 0.863 0.864 0.865 0.864 0.865 0.866 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.866 0.	920	0.841	0.838	0.839	0.838	0.837
0.846 0.843 0.844 0.842 0.846 0.843 0.843 0.842 0.847 0.843 0.843 0.843 0.849 0.849 0.845 0.845 0.853 0.850 0.851 0.851 0.853 0.856 0.853 0.853 0.861 0.855 0.856 0.853 0.863 0.860 0.852 0.853 0.863 0.860 0.852 0.853 0.863 0.860 0.853 0.853 0.864 0.865 0.866 0.854 0.864 0.865 0.866 0.866 0.867 0.865 0.866 0.866 0.867 0.865 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.865 0.867 0.867 0.869 0.866 0.865 0.867 0.869 0.	635	0.844	0.841	0.843	0.840	0.838
0.846 0.843 0.842 0.842 0.847 0.843 0.845 0.843 0.849 0.846 0.845 0.845 0.849 0.850 0.851 0.851 0.858 0.856 0.856 0.853 0.861 0.857 0.860 0.859 0.862 0.860 0.852 0.853 0.863 0.860 0.852 0.853 0.861 0.862 0.852 0.853 0.862 0.863 0.864 0.854 0.864 0.865 0.866 0.866 0.865 0.866 0.866 0.865 0.867 0.866 0.866 0.865 0.867 0.865 0.866 0.865 0.869 0.866 0.865 0.865 0.869 0.866 0.865 0.865 0.869 0.865 0.865 0.865 0.876 0.872 0.873 0.873 0.876 0.	640	0.846	0.843	0.844	0.842	0.839
0.847 0.843 0.845 0.843 0.848 0.846 0.845 0.845 0.853 0.850 0.851 0.845 0.858 0.855 0.852 0.851 0.861 0.857 0.860 0.858 0.863 0.860 0.859 0.859 0.862 0.860 0.859 0.859 0.861 0.860 0.860 0.859 0.861 0.857 0.860 0.859 0.861 0.862 0.859 0.857 0.862 0.863 0.865 0.857 0.864 0.865 0.865 0.865 0.864 0.865 0.866 0.866 0.867 0.866 0.866 0.866 0.867 0.866 0.866 0.866 0.867 0.867 0.866 0.866 0.869 0.865 0.866 0.866 0.860 0.862 0.862 0.866 0.860 0.	645	0.846	0.843	0.843	0.842	0.840
0.849 0.846 0.848 0.845 0.853 0.850 0.851 0.858 0.855 0.851 0.861 0.855 0.854 0.862 0.855 0.858 0.863 0.860 0.858 0.863 0.860 0.859 0.864 0.860 0.857 0.861 0.857 0.860 0.861 0.857 0.857 0.861 0.857 0.857 0.861 0.857 0.857 0.862 0.863 0.857 0.864 0.865 0.865 0.865 0.865 0.865 0.867 0.866 0.866 0.867 0.866 0.866 0.867 0.865 0.866 0.867 0.865 0.866 0.867 0.867 0.866 0.868 0.868 0.866 0.869 0.869 0.866 0.869 0.866 0.866 <td>059</td> <td>0.847</td> <td>0.843</td> <td>0.845</td> <td>0.843</td> <td>0.842</td>	059	0.847	0.843	0.845	0.843	0.842
0.853 0.850 0.852 0.854 0.861 0.855 0.856 0.854 0.863 0.860 0.853 0.853 0.863 0.860 0.862 0.853 0.863 0.860 0.853 0.853 0.861 0.860 0.853 0.857 0.861 0.857 0.860 0.857 0.861 0.857 0.860 0.857 0.862 0.853 0.860 0.857 0.863 0.864 0.865 0.865 0.864 0.865 0.866 0.866 0.864 0.865 0.866 0.866 0.867 0.863 0.866 0.866 0.867 0.863 0.866 0.866 0.867 0.863 0.865 0.866 0.867 0.863 0.865 0.866 0.869 0.863 0.864 0.866 0.860 0.863 0.863 0.863 0.860 0.	929	0.849	0.846	0.848	0.845	0.846
0.858 0.855 0.856 0.858 0.861 0.860 0.862 0.853 0.863 0.860 0.862 0.853 0.863 0.860 0.860 0.853 0.861 0.860 0.853 0.853 0.861 0.857 0.860 0.857 0.862 0.863 0.863 0.857 0.862 0.863 0.863 0.853 0.863 0.864 0.863 0.864 0.864 0.863 0.864 0.865 0.865 0.866 0.866 0.866 0.867 0.863 0.864 0.865 0.867 0.863 0.864 0.865 0.867 0.865 0.866 0.866 0.867 0.863 0.865 0.866 0.869 0.865 0.865 0.865 0.860 0.865 0.865 0.867 0.860 0.865 0.865 0.867 0.860 0.	099	0.853	0.850	0.852	0.851	0.851
0.861 0.857 0.860 0.858 0.863 0.860 0.859 0.859 0.862 0.860 0.859 0.859 0.862 0.860 0.860 0.858 0.861 0.860 0.859 0.857 0.861 0.857 0.860 0.857 0.862 0.857 0.860 0.857 0.863 0.864 0.865 0.865 0.864 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.856 0.869 0.865 0.865 0.856 0.860 0.865 0.865 0.865 0.860 0.865 0.865 0.867 0.860 0.865 0.865 0.867 0.860 0.865 0.865 0.867 0.870 0.871 0.872 0.872 0.871 0.	599	0.858	0.855	0.856	0.854	0.855
0.863 0.860 0.859 0.863 0.860 0.859 0.862 0.860 0.858 0.861 0.860 0.858 0.862 0.869 0.857 0.861 0.857 0.860 0.858 0.862 0.858 0.860 0.858 0.863 0.864 0.864 0.865 0.864 0.865 0.866 0.866 0.869 0.869 0.866 0.866 0.869 0.865 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.865 0.866 0.866 0.869 0.866 0.866 0.866 0.869 0.866 0.866 0.867 0.871 0.873 0.873 0.873 0.874 0.875 0.872 0.873 0.874 0.872 0.872 0.872 0.874 0.872<	0.29	0.861	0.857	0.860	0.858	0.857
0.863 0.860 0.859 0.862 0.860 0.858 0.861 0.860 0.858 0.862 0.869 0.857 0.861 0.857 0.860 0.857 0.862 0.858 0.860 0.858 0.863 0.864 0.865 0.866 0.864 0.865 0.866 0.866 0.867 0.868 0.866 0.865 0.867 0.867 0.865 0.865 0.867 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.879 0.871 0.871 0.871 0.871 0.872 0.872 0.872 0.872 0.872 0.872 0.872 0.874<	675	0.863	0.860	0.862	0.859	0.858
0.862 0.860 0.858 0.861 0.857 0.859 0.857 0.861 0.857 0.860 0.857 0.861 0.858 0.860 0.858 0.862 0.863 0.863 0.858 0.863 0.864 0.866 0.866 0.864 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.865 0.867 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.865 0.869 0.865 0.865 0.867 0.870 0.871 0.872 0.873 0.871 0.872 0.873 0.873 0.872 0.872 0.872 0.873 0.873 0.874 0.	089	0.863	0.860	0.860	0.859	0.857
0.861 0.857 0.859 0.857 0.861 0.857 0.860 0.858 0.862 0.858 0.860 0.858 0.862 0.863 0.863 0.859 0.863 0.864 0.866 0.866 0.869 0.868 0.866 0.866 0.869 0.864 0.865 0.865 0.860 0.864 0.865 0.865 0.860 0.856 0.865 0.856 0.860 0.865 0.865 0.865 0.860 0.865 0.865 0.865 0.860 0.865 0.865 0.865 0.860 0.865 0.865 0.867 0.860 0.865 0.865 0.867 0.871 0.873 0.873 0.874 0.874 0.874 0.873 0.873 0.872 0.872 0.872 0.872	982	0.862	098.0	0.860	0.858	0.856
0.861 0.857 0.860 0.858 0.862 0.858 0.860 0.858 0.862 0.859 0.861 0.859 0.864 0.863 0.861 0.861 0.869 0.865 0.866 0.866 0.869 0.866 0.867 0.866 0.867 0.865 0.865 0.865 0.869 0.859 0.856 0.856 0.859 0.859 0.856 0.856 0.850 0.856 0.856 0.857 0.860 0.856 0.856 0.857 0.861 0.856 0.856 0.857 0.862 0.863 0.856 0.863 0.863 0.865 0.865 0.867 0.873 0.873 0.873 0.874 0.874 0.874 0.873 0.873 0.874 0.872 0.872 0.872	069	0.861	0.857	0.859	0.857	0.857
0.861 0.858 0.860 0.858 0.862 0.859 0.861 0.859 0.864 0.861 0.861 0.861 0.869 0.866 0.866 0.866 0.870 0.866 0.867 0.867 0.867 0.867 0.862 0.862 0.862 0.865 0.865 0.856 0.869 0.859 0.856 0.857 0.860 0.856 0.856 0.857 0.860 0.863 0.863 0.863 0.860 0.863 0.863 0.863 0.870 0.871 0.872 0.873 0.871 0.873 0.873 0.873 0.872 0.874 0.873 0.873 0.874 0.874 0.873 0.873 0.874 0.874 0.873 0.873 0.874 0.874 0.872 0.873	569	0.861	0.857	0.860	0.857	0.856
0.862 0.859 0.861 0.859 0.864 0.861 0.863 0.861 0.869 0.865 0.866 0.866 0.871 0.868 0.867 0.866 0.867 0.864 0.865 0.865 0.862 0.859 0.859 0.859 0.860 0.856 0.856 0.857 0.860 0.863 0.863 0.863 0.860 0.863 0.863 0.863 0.876 0.876 0.863 0.863 0.873 0.873 0.873 0.873 0.876 0.875 0.873 0.874 0.876 0.877 0.873 0.873 0.876 0.877 0.874 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.874 0.872 0.873 0.873 0.874 0.	200	0.861	0.858	098.0	0.858	0.859
0.864 0.861 0.863 0.861 0.869 0.865 0.866 0.866 0.871 0.868 0.870 0.867 0.869 0.867 0.866 0.867 0.867 0.862 0.869 0.859 0.859 0.859 0.856 0.856 0.860 0.857 0.853 0.860 0.863 0.863 0.865 0.865 0.867 0.876 0.873 0.873 0.873 0.873 0.873 0.874 0.875 0.873 0.876 0.877 0.873 0.876 0.877 0.873 0.876 0.877 0.873 0.876 0.877 0.873 0.877 0.874 0.873 0.874 0.874 0.872	705	0.862	0.859	0.861	0.859	0.859
0.869 0.865 0.866 0.866 0.871 0.868 0.870 0.867 0.869 0.869 0.867 0.866 0.867 0.865 0.866 0.866 0.862 0.859 0.859 0.856 0.860 0.857 0.856 0.857 0.860 0.863 0.863 0.867 0.876 0.873 0.873 0.873 0.876 0.873 0.874 0.873 0.876 0.877 0.873 0.874 0.876 0.877 0.873 0.873 0.876 0.877 0.873 0.874 0.876 0.877 0.873 0.873 0.877 0.876 0.873 0.872 0.876 0.877 0.872 0.870	710	0.864	0.861	0.863	0.861	0.861
0.871 0.868 0.870 0.867 0.869 0.864 0.865 0.862 0.862 0.859 0.865 0.862 0.862 0.859 0.869 0.859 0.859 0.856 0.856 0.856 0.860 0.863 0.863 0.863 0.869 0.863 0.867 0.867 0.873 0.873 0.873 0.873 0.876 0.873 0.873 0.874 0.876 0.877 0.873 0.874 0.876 0.877 0.873 0.874 0.876 0.877 0.873 0.873 0.876 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.877 0.874 0.872 0.870	715	0.869	0.865	0.866	0.866	0.865
0.869 0.866 0.867 0.866 0.867 0.864 0.865 0.862 0.862 0.859 0.859 0.859 0.859 0.856 0.856 0.856 0.860 0.863 0.863 0.863 0.869 0.865 0.863 0.867 0.873 0.873 0.873 0.873 0.876 0.873 0.873 0.874 0.876 0.877 0.873 0.874 0.876 0.877 0.873 0.873 0.877 0.873 0.874 0.873 0.876 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873	720	0.871	0.868	0.870	0.867	0.865
0.867 0.864 0.865 0.862 0.862 0.859 0.859 0.859 0.859 0.856 0.856 0.856 0.860 0.863 0.863 0.863 0.869 0.865 0.863 0.867 0.873 0.873 0.870 0.876 0.873 0.873 0.876 0.875 0.873 0.877 0.874 0.874 0.876 0.877 0.873 0.877 0.874 0.873 0.876 0.877 0.873 0.877 0.874 0.873 0.876 0.877 0.873 0.877 0.874 0.873 0.874 0.874 0.873	725	0.869	998.0	0.867	0.866	0.863
0.862 0.859 0.861 0.859 0.859 0.856 0.858 0.856 0.860 0.857 0.857 0.857 0.865 0.865 0.863 0.863 0.869 0.865 0.867 0.867 0.873 0.873 0.873 0.873 0.876 0.875 0.873 0.874 0.876 0.877 0.874 0.873 0.876 0.877 0.874 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873	730	0.867	0.864	0.865	0.862	0.861
0.859 0.856 0.858 0.856 0.860 0.857 0.859 0.857 0.866 0.863 0.865 0.863 0.869 0.863 0.867 0.873 0.873 0.870 0.876 0.873 0.873 0.877 0.873 0.874 0.876 0.877 0.873 0.877 0.874 0.873 0.876 0.877 0.873 0.877 0.873 0.873 0.876 0.877 0.873 0.877 0.873 0.873	735	0.862	0.859	0.861	0.859	0.857
0.860 0.857 0.859 0.857 0.866 0.863 0.865 0.863 0.873 0.873 0.877 0.874 0.875 0.873 0.875 0.873 0.873 0.876 0.877 0.874 0.876 0.877 0.873 0.877 0.874 0.873 0.875 0.876 0.873 0.877 0.877 0.873 0.877 0.876 0.873	740	0.859	0.856	0.858	0.856	0.855
0.866 0.863 0.865 0.863 0.863 0.869 0.865 0.868 0.867 0.873 0.873 0.873 0.874 0.874 0.874 0.875 0.877 0.874 0.876 0.877 0.873 0.877 0.873 0.874 0.875 0.876 0.873 0.877 0.872 0.872 0.874 0.872 0.872	745	0.860	0.857	0.859	0.857	0.856
0.869 0.865 0.868 0.867 0.873 0.871 0.873 0.870 0.876 0.873 0.873 0.873 0.878 0.875 0.874 0.874 0.876 0.876 0.873 0.877 0.876 0.873 0.877 0.872 0.872 0.874 0.872 0.872	750	0.866	0.863	0.865	0.863	0.862
0.873 0.871 0.873 0.870 0.876 0.873 0.875 0.873 0.878 0.874 0.874 0.874 0.876 0.877 0.873 0.873 0.877 0.877 0.873 0.873 0.877 0.877 0.873 0.873	755	0.869	0.865	0.868	0.867	0.867
0.876 0.873 0.875 0.873 0.878 0.875 0.874 0.874 0.876 0.876 0.873 0.875 0.876 0.873 0.877 0.872 0.872 0.874 0.872 0.870	091	0.873	0.871	0.873	0.870	0.871
0.878 0.875 0.877 0.874 0.876 0.874 0.873 0.875 0.872 0.872 0.874 0.872 0.872	765	0.876	0.873	0.875	0.873	0.872
0.876 0.874 0.876 0.873 0.875 0.872 0.874 0.872 0.874 0.872 0.870	170	0.878	0.875	0.877	0.874	0.874
0.875 0.872 0.874 0.872 0.874 0.872 0.870	775	0.876	0.874	0.876	0.873	0.873
0.874 0.872 0.872 0.870	780	0.875	0.872	0.874	0.872	0.870
	785	0.874	0.872	0.872	0.870	0.869

	UV/VIS/NIR SPI	CTROPHOTO	UV/VIS/NIR SPECTROPHOTOMETER - SIERRACIN/SYLMAR CORP.	ACIN/SYLMAR	CORP.
			SAMPLE 2		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	,	(trans.)	(trans.)
790	0.873	0.870	0.872	698.0	0.867
795	0.871	0.868	698.0	0.868	0.867
800	0.871	0.867		198.0	0.867
802	0.871	0.869	0.871	198.0	0.868
810	0.872	0.870	0.872	0.868	0.869
815	0.875	0.871		0.872	0.873
820	0.878	0.875	0.877	0.873	0.874
825	0.877	0.875	0.877	0.876	0.876
830		0.878		0.876	0.874
835		0.878		0.876	0.873
840		0.875		0.874	0.871
845		0.867		698.0	0.868
850		098:0		0.863	0.861
855		0.851		0.853	0.852
098		0.836	0.838	0.834	0.835
865		0.832		0.820	0.822
870		0.830	0.831	0.822	0.823
875		0.835		0.836	0.838
880		0.854	0.862	0.849	0.853
885	0.863	0.864		0.855	0.856
068		0.853		0.850	0.849
895		0.847	0.849	0.841	0.839
006		0.825		0.822	0.824
905		0.808	0.813	0.802	0.802
910		0.804	0.808	0.801	0.802
915		0.836		0.834	0.834
920		0.856	998.0	0.853	0.852
925		0.873	0.873	0.859	098.0
930		0.867	0.867	0.864	0.863
935		0.872	0.878	0.868	0.868
940		0.877	0.881	898.0	0.868
945	0.865	0.867	0.870	698.0	0.871
950		0.876		0.870	0.875

Rep. 2 (trans.) (10.482) 0.482 0.482 0.520 0.520 0.520 0.526 0.526 0.527 0.527 0.623 0.624 0.625	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	ONG LAB (HECV)
Rep. 1 F. (trans.) (tr	SAMPLE 3	
(trans.) (tans.) (tans.) (10.481 0.481 0.481 0.512 0.528 0.514 0.564 0.564 0.569 0.589 0.589 0.589 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.619 0.619 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.659	Rep. 3	Rep. 4 Rep. 5
0.481 0.512 0.497 0.528 0.528 0.564 0.564 0.569 0.618 0.618 0.618 0.619 0.608 0.619 0.619 0.619 0.619 0.619 0.619 0.619 0.619 0.619 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616 0.616	(trans.)	(trans.) (trans.)
0.512 0.497 0.528 0.528 0.564 0.564 0.569 0.589 0.589 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.618 0.619 0.619 0.616	0.484	0.494 0.490
0.497 0.522 0.528 0.564 0.564 0.560 0.589 0.589 0.589 0.589 0.618 0.618 0.618 0.618 0.618 0.619 0.619 0.616 0.641	0.519	0.514 0.509
0.522 0.528 0.514 0.564 0.560 0.589 0.589 0.589 0.618 0.618 0.618 0.618 0.618 0.629 0.629 0.608 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.676 0.666 0.697		0.505 0.494
0.528 0.544 0.564 0.560 0.589 0.589 0.589 0.618 0.618 0.618 0.629 0.629 0.608 0.608 0.619 0.641	0.528	0.528 0.525
0.514 0.564 0.560 0.589 0.589 0.589 0.618 0.618 0.618 0.619 0.608 0.608 0.608 0.608 0.608 0.609 0.616 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.659		0.539 0.497
0.564 0.543 0.560 0.569 0.618 0.618 0.644 0.608 0.608 0.619 0.619 0.619 0.619 0.619 0.619 0.619 0.619 0.616 0.641	5 0.513	0.523 0.529
0.543 0.560 0.589 0.589 0.618 0.618 0.644 0.629 0.608 0.619 0.641	3 0.567	0.564 0.540
0.560 0.589 0.597 0.618 0.618 0.644 0.629 0.608 0.619 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.658	7 0.544	0.544 0.534
0.589 0.569 0.5618 0.618 0.644 0.593 0.666 0.608 0.619 0.619 0.678 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641		
0.569 0.597 0.618 0.618 0.644 0.629 0.608 0.608 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.676 0.676 0.676 0.676 0.676 0.676 0.676 0.678	5 0.596	
0.597 0.618 0.618 0.618 0.644 0.608 0.608 0.609 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.659	3 0.572	
0.618 0.586 0.644 0.644 0.629 0.608 0.619 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.678 0.676 0.616 0.616 0.616 0.616 0.616 0.616	909:0	0.603 0.608
0.586 0.618 0.644 0.629 0.608 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.678	4 0.626	0.623 0.574
0.618 0.644 0.593 0.629 0.608 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.658	7 0.588	0.589 0.589
0.644 0.593 0.629 0.666 0.608 0.619 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641	3 0.630	0.627 0.628
0.593 0.629 0.666 0.608 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641 0.641		0.645 0.594
0.629 0.666 0.608 0.619 0.671 0.641 0.676 0.676 0.676 0.608 0.678 0.678 0.678	7 0.598	0.599 0.602
0.666 0.608 0.619 0.678 0.641 0.641 0.616 0.594 0.668 0.608	0.628	0.633 0.636
0.608 0.619 0.678 0.641 0.641 0.676 0.616 0.608 0.608 0.607 0.608	0.671	0.667 0.619
0.619 0.678 0.641 0.597 0.641 0.616 0.594 0.668 0.607 0.607	2 0.615	0.615 0.601
0.678 0.641 0.597 0.641 0.676 0.594 0.668 0.678 0.678	5 0.621	0.621 0.649
0.641 0.597 0.641 0.676 0.594 0.668 0.678 0.607	1 0.676	0.676 0.648
0.597 0.641 0.676 0.616 0.594 0.668 0.678 0.607		0.644 0.595
0.641 0.676 0.616 0.594 0.668 0.678 0.607	0.598	0.600 0.615
0.676 0.616 0.594 0.668 0.678 0.595 0.664	0.647	0.646 0.661
0.616 0.594 0.668 0.678 0.607 0.664	9 0.682	0.685 0.618
0.594 0.668 0.678 0.607 0.595		0.621 0.588
0.668 0.678 0.607 0.595		
0.678 0.607 0.595 0.664	0 0.672	0.672 0.660
0.607 0.595 0.664	0.677	0.684 0.617
0.595	1 0.612	0.611 0.586
0.664	1 0.595	0.595 0.634
		0.668 0.665
615 0.683 0.685	5 0.691	0.691 0.612

I	EG&G RADOMA	SPECTRARA	DIOMETER - A	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	B (HECV)
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.602	0.606	0.609	0.609	0.568
625	0.571	0.571	0.576	0.575	0.601
089	0.624	0.622	0.628	0.626	0.665
635	0.683	0.687	0.691	0.692	0.641
640	0.632	0.642	0.639	0.640	0.573
645	0.559	0.564	0.566		0.554
029	0.571	0.567	0.578		0.615
655	0.653	0.648	0.655	0.655	099.0
099	629.0	0.684	0.682	0.684	0.596
999	0.568	0.577	695'0	9250	0.545
0.09	0.573	0.588	0.587	0.581	0.540
675	0.543	0.540	0.545	0.546	0.594
089	0.625	0.623	1690	069'0	0.638
685	0.656	0.661	659'0	659'0	0.590
069	0.599	0.607	0.603	609'0	0.529
569	0.519	0.522	0.520	0.525	0.507
200	0.515	0.517	0.522	0.523	0.566
705	0.583	0.574	0.583	0.585	0.622
710	0.651	0.650	0.657	0.658	0.623
715	0.626	0.634	0.632	0.632	0.549
720	0.545	0.554	0.545	0.554	0.496
725	0.486	0.488	0.491	0.492	0.506
730	0.507	0.504	0.506	0.510	0.557
735	0.569	0.562	0.572	0.571	0.615
740	0.627	0.631			0.585
745	0.598	0.606			0.523
750	0.521	0.529	0.524	0.529	0.469
755	0.464	0.466	0.465	0.466	0.468
160	0.474	0.470		0.472	0.518
765	0.529	0.522	0.527	0.528	0.586
770	0.604	0.602	0.609		0.597
775	0.612	0.610			0.548
780	0.549	0.559			0.472
785	0.461	0.471	0.465	0.471	0.438

Rep. 4 (trans.) (0.440 (trans.) (0.520 (trans.) (0.533 (trans.) (0.533 (trans.) (0.533 (trans.) (0.533 (trans.) (0.533 (trans.) (0.533 (trans.) (tr	Ĭ	G&G RADOM	A SPECTRARA	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	MSTRONG LAB	(HECV)
Rep. 1 Rep. 2 Rep. 3 Rep. 4 F (trans.)				SAMPLE 3		
(trans.)	wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
0,436 0,437 0,440 0,440 0,454 0,451 0,457 0,456 0,521 0,523 0,520 0,580 0,575 0,575 0,589 0,533 0,531 0,529 0,533 0,531 0,628 0,637 0,632 0,628 0,637 0,631 0,456 0,467 0,463 0,445 0,442 0,463 0,443 0,443 0,423 0,483 0,483 0,430 0,567 0,562 0,568 0,545 0,548 0,497 0,483 0,498 0,497 0,484 0,491 0,568 0,568 0,404 0,499 0,488 0,497 0,404 0,491 0,500 0,503 0,404 0,443 0,488 0,497 0,496 0,491 0,500 0,500 0,496 0,491 0,500 0,480	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.454 0.451 0.457 0.456 0.520 0.521 0.520 0.520 0.580 0.575 0.523 0.525 0.589 0.537 0.528 0.533 0.525 0.537 0.528 0.533 0.456 0.467 0.462 0.463 0.420 0.448 0.421 0.424 0.420 0.450 0.452 0.452 0.454 0.449 0.445 0.445 0.467 0.462 0.463 0.452 0.454 0.441 0.442 0.452 0.454 0.451 0.511 0.510 0.567 0.562 0.568 0.452 0.574 0.548 0.451 0.548 0.409 0.448 0.451 0.568 0.548 0.348 0.451 0.568 0.409 0.348 0.451 0.451 0.449 0.449 0.451 0.451 0.449 0.	062	0.436	0.437	0.440	0.440	0.443
0.521 0.511 0.523 0.520 0.580 0.575 0.575 0.575 0.589 0.588 0.593 0.531 0.589 0.537 0.528 0.533 0.456 0.467 0.462 0.463 0.420 0.442 0.442 0.453 0.423 0.443 0.442 0.452 0.473 0.454 0.452 0.452 0.474 0.445 0.445 0.452 0.545 0.548 0.548 0.548 0.404 0.412 0.405 0.497 0.404 0.412 0.408 0.497 0.404 0.412 0.408 0.497 0.404 0.443 0.348 0.480 0.409 0.443 0.451 0.480 0.409 0.443 0.451 0.480 0.449 0.443 0.451 0.480 0.449 0.443 0.451 0.480 0.449 0.	795	0.454	0.451	0.457	0.456	0.508
0.580 0.575 0.576 0.575 0.589 0.589 0.591 0.591 0.525 0.533 0.533 0.533 0.456 0.467 0.462 0.463 0.420 0.424 0.424 0.424 0.423 0.415 0.423 0.420 0.424 0.456 0.455 0.452 0.454 0.456 0.456 0.456 0.545 0.548 0.457 0.568 0.548 0.548 0.451 0.568 0.483 0.499 0.448 0.451 0.483 0.348 0.348 0.348 0.496 0.449 0.451 0.451 0.496 0.449 0.451 0.451 0.496 0.441 0.442 0.451 0.449 0.441 0.442 0.451 0.440 0.441 0.442 0.451 0.340 0.442 0.452 0.452 0.340 0.	008	0.521	0.511	0.523	0.520	0.566
0.589 0.588 0.593 0.591 0.525 0.523 0.528 0.533 0.456 0.467 0.462 0.463 0.420 0.418 0.424 0.424 0.423 0.415 0.424 0.424 0.424 0.450 0.423 0.420 0.454 0.450 0.458 0.450 0.511 0.511 0.511 0.513 0.548 0.458 0.458 0.458 0.548 0.548 0.451 0.568 0.548 0.488 0.497 0.497 0.409 0.488 0.497 0.498 0.449 0.443 0.488 0.497 0.449 0.441 0.451 0.451 0.440 0.441 0.451 0.451 0.446 0.441 0.451 0.442 0.446 0.441 0.442 0.442 0.340 0.342 0.451 0.344 0.345 0.	805	0.580	0.575	0.576	0.575	0.581
0.525 0.528 0.533 0.456 0.467 0.462 0.463 0.420 0.467 0.462 0.463 0.420 0.424 0.424 0.424 0.423 0.424 0.420 0.424 0.454 0.450 0.455 0.452 0.541 0.562 0.568 0.558 0.548 0.484 0.497 0.408 0.404 0.412 0.405 0.497 0.405 0.373 0.348 0.497 0.406 0.373 0.348 0.451 0.449 0.443 0.451 0.451 0.449 0.443 0.451 0.451 0.440 0.443 0.451 0.451 0.446 0.443 0.451 0.451 0.446 0.443 0.451 0.451 0.446 0.443 0.451 0.451 0.340 0.451 0.452 0.452 0.344 0.348 0.	810	0.589	0.588	0.593	0.591	0.529
0,456 0,467 0,462 0,463 0,420 0,421 0,418 0,424 0,423 0,415 0,423 0,420 0,424 0,454 0,456 0,452 0,454 0,450 0,452 0,452 0,511 0,511 0,510 0,568 0,545 0,562 0,568 0,568 0,483 0,499 0,488 0,497 0,404 0,412 0,405 0,497 0,404 0,412 0,366 0,378 0,401 0,348 0,348 0,348 0,449 0,443 0,451 0,480 0,449 0,443 0,451 0,480 0,449 0,481 0,515 0,480 0,446 0,481 0,482 0,480 0,446 0,481 0,482 0,480 0,344 0,348 0,348 0,345 0,344 0,345 0,346 0,346 0,499 0,	815	0.525	0.537	0.528	0.533	0.463
0,420 0,421 0,418 0,424 0,423 0,415 0,423 0,420 0,454 0,450 0,452 0,452 0,454 0,450 0,452 0,452 0,511 0,511 0,510 0,510 0,567 0,562 0,568 0,568 0,545 0,548 0,554 0,568 0,403 0,499 0,488 0,497 0,404 0,412 0,405 0,497 0,404 0,412 0,488 0,497 0,404 0,412 0,371 0,368 0,409 0,349 0,348 0,398 0,449 0,443 0,451 0,451 0,449 0,443 0,482 0,480 0,449 0,482 0,480 0,480 0,466 0,482 0,345 0,345 0,344 0,345 0,348 0,345 0,349 0,349 0,349 0,444 0,499 0,	820	0.456	0.467	0.462	0.463	0.429
0.423 0.415 0.423 0.420 0.454 0.450 0.455 0.452 0.511 0.511 0.510 0.510 0.545 0.562 0.568 0.568 0.545 0.548 0.551 0.568 0.545 0.548 0.497 0.498 0.497 0.483 0.499 0.488 0.497 0.413 0.404 0.412 0.405 0.413 0.491 0.366 0.374 0.366 0.370 0.368 0.449 0.443 0.366 0.371 0.308 0.449 0.443 0.451 0.451 0.481 0.449 0.449 0.448 0.451 0.480 0.466 0.481 0.509 0.375 0.345 0.466 0.481 0.482 0.345 0.345 0.340 0.342 0.348 0.348 0.345 0.341 0.348 0.348 0.349 0.349	825	0.420	0.421	0.418	0.424	0.417
0.454 0.450 0.455 0.452 0.511 0.511 0.510 0.510 0.547 0.562 0.568 0.554 0.548 0.551 0.554 0.554 0.483 0.497 0.488 0.497 0.404 0.412 0.405 0.413 0.366 0.371 0.368 0.368 0.368 0.366 0.370 0.370 0.401 0.398 0.398 0.398 0.449 0.443 0.451 0.451 0.449 0.443 0.500 0.503 0.449 0.443 0.515 0.480 0.440 0.510 0.515 0.480 0.440 0.510 0.515 0.480 0.440 0.510 0.515 0.480 0.340 0.342 0.348 0.345 0.344 0.348 0.348 0.345 0.349 0.417 0.464 0.459 0.499 0.	830	0.423	0.415	0.423	0.420	0.443
0.511 0.511 0.510 0.567 0.562 0.568 0.568 0.545 0.548 0.554 0.558 0.483 0.499 0.488 0.497 0.404 0.412 0.405 0.413 0.404 0.373 0.371 0.368 0.368 0.366 0.370 0.378 0.409 0.443 0.366 0.370 0.449 0.443 0.451 0.451 0.449 0.443 0.451 0.451 0.449 0.443 0.451 0.451 0.446 0.481 0.500 0.503 0.466 0.481 0.482 0.480 0.469 0.516 0.517 0.345 0.340 0.328 0.348 0.345 0.344 0.345 0.348 0.345 0.347 0.348 0.349 0.449 0.449 0.444 0.444 0.459 0.499 0.506 0.	835	0.454	0.450	0.455	0.452	0.494
0.567 0.562 0.568 0.568 0.545 0.548 0.554 0.554 0.483 0.499 0.488 0.497 0.404 0.412 0.405 0.413 0.404 0.373 0.371 0.368 0.366 0.366 0.370 0.368 0.409 0.493 0.398 0.398 0.449 0.443 0.451 0.451 0.496 0.491 0.500 0.503 0.410 0.481 0.482 0.481 0.466 0.481 0.482 0.480 0.413 0.423 0.425 0.480 0.340 0.342 0.345 0.345 0.340 0.342 0.345 0.345 0.344 0.345 0.348 0.345 0.349 0.345 0.348 0.345 0.340 0.340 0.348 0.345 0.340 0.344 0.444 0.444 0.499 0.	840	0.511	0.511	0.511	0.510	0.556
0.545 0.551 0.554 0.483 0.499 0.488 0.497 0.404 0.412 0.405 0.413 0.366 0.373 0.371 0.368 0.368 0.366 0.370 0.370 0.401 0.398 0.398 0.398 0.449 0.491 0.481 0.481 0.481 0.466 0.481 0.482 0.480 0.413 0.428 0.425 0.480 0.449 0.382 0.375 0.345 0.344 0.382 0.375 0.345 0.344 0.345 0.348 0.345 0.344 0.345 0.348 0.345 0.373 0.367 0.378 0.345 0.409 0.417 0.441 0.441 0.441 0.499 0.506 0.509 0.519 0.499 0.506 0.519 0.519 0.499 0.506 0.519 0.519 0.	845	0.567	0.562	0.568	0.568	0.536
0.483 0.499 0.488 0.497 0.404 0.412 0.405 0.413 0.366 0.373 0.371 0.368 0.368 0.366 0.370 0.368 0.401 0.398 0.398 0.398 0.496 0.491 0.500 0.503 0.496 0.481 0.482 0.480 0.466 0.481 0.482 0.480 0.413 0.428 0.425 0.480 0.344 0.382 0.375 0.345 0.344 0.345 0.348 0.345 0.373 0.367 0.378 0.375 0.417 0.417 0.441 0.441 0.469 0.506 0.519 0.499 0.506 0.519 0.499 0.506 0.519 0.499 0.506 0.519 0.496 0.415 0.458	058	0.545	0.548	0.551	0.554	0.472
0.404 0.412 0.405 0.413 0.366 0.373 0.371 0.368 0.368 0.366 0.366 0.370 0.401 0.398 0.398 0.398 0.449 0.443 0.451 0.451 0.496 0.491 0.500 0.503 0.516 0.481 0.482 0.480 0.466 0.481 0.482 0.480 0.413 0.428 0.425 0.480 0.340 0.382 0.375 0.345 0.344 0.345 0.348 0.345 0.344 0.345 0.348 0.345 0.373 0.367 0.378 0.345 0.417 0.417 0.464 0.459 0.499 0.506 0.509 0.519 0.496 0.513 0.506 0.519 0.496 0.412 0.458 0.458 0.496 0.412 0.415 0.415	\$58	0.483	0.499	0.488	0.497	0.412
0.366 0.373 0.371 0.368 0.368 0.366 0.366 0.370 0.401 0.398 0.398 0.398 0.449 0.443 0.451 0.451 0.449 0.491 0.500 0.503 0.466 0.481 0.482 0.480 0.466 0.481 0.482 0.480 0.340 0.382 0.375 0.375 0.340 0.382 0.375 0.345 0.344 0.345 0.348 0.345 0.373 0.367 0.373 0.350 0.417 0.417 0.441 0.459 0.499 0.506 0.509 0.519 0.499 0.506 0.500 0.519 0.496 0.513 0.509 0.519 0.496 0.412 0.466 0.458 0.496 0.513 0.509 0.519 0.496 0.412 0.415 0.415	098	0.404	0.412	0.405	0.413	0.371
0.368 0.366 0.366 0.370 0.401 0.398 0.398 0.398 0.449 0.443 0.451 0.451 0.449 0.443 0.451 0.451 0.496 0.481 0.500 0.503 0.466 0.481 0.482 0.480 0.413 0.428 0.423 0.425 0.340 0.382 0.348 0.345 0.340 0.353 0.348 0.345 0.344 0.345 0.353 0.350 0.373 0.367 0.357 0.350 0.417 0.417 0.444 0.459 0.499 0.506 0.509 0.519 0.499 0.506 0.500 0.519 0.496 0.417 0.464 0.459 0.499 0.506 0.500 0.519 0.496 0.416 0.458 0.458 0.406 0.416 0.418 0.418	598	0.366	0.373	0.371	0.368	0.379
0.401 0.398 0.398 0.398 0.449 0.443 0.451 0.451 0.496 0.491 0.500 0.503 0.516 0.510 0.503 0.517 0.466 0.481 0.482 0.517 0.413 0.428 0.423 0.425 0.340 0.353 0.345 0.345 0.344 0.345 0.350 0.350 0.373 0.367 0.378 0.350 0.417 0.417 0.441 0.459 0.469 0.506 0.509 0.519 0.499 0.506 0.509 0.519 0.436 0.446 0.459 0.519 0.496 0.513 0.509 0.519 0.406 0.416 0.458 0.458	028	0.368	0.366	0.366	0.370	0.395
0.449 0.443 0.451 0.451 0.496 0.491 0.500 0.503 0.516 0.510 0.517 0.517 0.466 0.481 0.482 0.480 0.413 0.428 0.423 0.425 0.340 0.353 0.348 0.345 0.344 0.345 0.350 0.350 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.436 0.546 0.513 0.519 0.439 0.446 0.466 0.458 0.406 0.416 0.466 0.458	<i>\$1</i> 8	0.401	0.398	0.398	0.398	0.450
0.496 0.491 0.500 0.503 0.516 0.510 0.517 0.517 0.466 0.481 0.482 0.480 0.413 0.428 0.425 0.425 0.364 0.382 0.375 0.375 0.344 0.345 0.348 0.345 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.439 0.546 0.519 0.436 0.446 0.458 0.406 0.416 0.458	088	0.449	0.443	0.451	0.451	0.490
0.516 0.510 0.517 0.466 0.481 0.482 0.480 0.413 0.428 0.423 0.425 0.364 0.382 0.375 0.375 0.349 0.348 0.345 0.373 0.367 0.350 0.417 0.417 0.431 0.469 0.474 0.464 0.499 0.506 0.509 0.439 0.506 0.519 0.439 0.446 0.458 0.406 0.416 0.458	588	0.496	0.491	0.500	0.503	0.507
0.466 0.481 0.482 0.480 0.413 0.428 0.423 0.425 0.364 0.382 0.375 0.375 0.340 0.353 0.348 0.345 0.344 0.367 0.350 0.350 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.439 0.476 0.466 0.519 0.439 0.476 0.466 0.459 0.439 0.476 0.500 0.513 0.406 0.436 0.466 0.458	068	0.516	0.510	0.515	0.517	0.454
0.413 0.428 0.423 0.425 0.364 0.382 0.375 0.375 0.340 0.353 0.348 0.345 0.344 0.345 0.350 0.350 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.496 0.506 0.509 0.519 0.496 0.476 0.466 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.412 0.415	\$68	0.466	0.481	0.482	0.480	0.390
0.364 0.382 0.375 0.375 0.340 0.353 0.348 0.345 0.344 0.345 0.350 0.350 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.496 0.506 0.509 0.519 0.496 0.513 0.500 0.513 0.406 0.412 0.412 0.415	006	0.413	0.428	0.423	0.425	0.355
0.340 0.353 0.348 0.345 0.344 0.345 0.355 0.350 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.496 0.506 0.509 0.519 0.496 0.513 0.500 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.412 0.415	905	0.364	0.382	0.375	0.375	0.361
0.344 0.345 0.355 0.350 0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.496 0.513 0.500 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.415 0.415	910	0.340	0.353	0.348	0.345	0.358
0.373 0.367 0.378 0.371 0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.496 0.513 0.500 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.415 0.415	915	0.344	0.345	0.355	0.350	0.380
0.417 0.417 0.431 0.421 0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.496 0.513 0.500 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.415	920	0.373	0.367	0.378	0.371	0.416
0.469 0.474 0.464 0.459 0.499 0.506 0.509 0.519 0.496 0.513 0.503 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.415	925	0.417	0.417	0.431	0.421	0.471
0.499 0.506 0.509 0.519 0.496 0.513 0.500 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.412 0.415	930	0.469	0.474	0.464	0.459	0.482
0.496 0.513 0.500 0.513 0.439 0.476 0.466 0.458 0.406 0.412 0.415	935	0.499	0.506		0.519	0.468
0.439 0.476 0.466 0.458 0.406 0.412 0.415	940	0.496	0.513	0.500	0.513	0.424
0.406 0.412 0.412 0.415	945	0.439	0.476		0.458	0.376
	950	0.406	0.412	0.412	0.415	0.360

	CARY 5G SPEC	TRAPHOTOM	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	, AFB (AL/OEO)	
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.450	0.450	0.450	0.448	0.448
455	0.530	0.531	0.530	0.531	0.531
460	0.486	0.485	0.486	0.482	0.483
465	0.519	0.520	0.520	0.521	0.523
470	0.550	0.550		0.546	0.547
475	0.507	0.507	0.507	0.508	0.508
480	0.599	0.599	0.599	0.599	0.599
485	0.549	0.549	0.550	0.546	0.546
490	0.578	0.578	0.577	0.580	0.580
495	0.640	0.640		0.637	0.638
200	0.572	0.572	0.573	0.569	0.570
505	0.629	0.630	0.628	0.631	0.632
510	0.665	0.665	99.0	0.661	0.661
515	0.587	0.587	0.589	0.586	0.586
520		0.654		0.656	0.657
525		0.691		0.688	0.688
530	0.601	0.601	0.603	0.599	0.599
535		0.648	0.648	0.650	0.651
540		0.720		0.717	0.717
545		0.626		0.622	0.623
550		0.622		0.623	0.624
555		0.727		0.726	0.728
260		0.679	6290	0.674	0.674
565	0.596	0.596		0.594	0.595
570	0.665	0.665		0.667	0.668
575	0.736	0.736	0.736	0.732	0.734
580	0.633	0.632	0.633	0.627	0.629
585	0.590	0.590		0.590	0.591
590		0.692		0.694	0.695
595	0.732	0.732	0.731	0.727	0.729
009	0.617	0.616		0.612	0.612
605				0.579	0.579
610				0.683	0.685
615	0.740	0.739	0.738	0.736	0.738

wavelength Rep. 2 Rep. 3 Rep. 4 Rep. 5 (rmn) (trans.) (trans.) (trans.) (trans.) (rmn) (trans.) (trans.) (trans.) (trans.) (rmn) (trans.) (trans.) (trans.) (trans.) (trans.) (rmn) (trans.) (trans.) (trans.) (trans.) (trans.) 623 0.560 0.560 0.625 0.629 0.630 630 0.626 0.625 0.629 0.630 643 0.626 0.626 0.629 0.631 643 0.626 0.626 0.632 0.631 643 0.562 0.652 0.538 0.539 643 0.632 0.652 0.538 0.539 644 0.642 0.651 0.652 0.653 645 0.634 0.531 0.534 0.534 0.534 645 0.642 0.651 0.654 0.654 0.654 0.654<	0	CARY 5G SPECT	TRAPHOTOMI	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	, AFB (AL/OEO)	
Rep. 1 Rep. 2 Rep. 3 Rep. 4 F. (trans.)				SAMPLE 3		
(trans.) (trans.)	wavelength	Rep. 1	Rep. 2			Rep. 5
0.632 0.631 0.632 0.626 0.560 0.560 0.561 0.559 0.626 0.626 0.625 0.629 0.734 0.731 0.629 0.682 0.682 0.676 0.682 0.682 0.678 0.546 0.546 0.536 0.546 0.546 0.536 0.651 0.652 0.658 0.651 0.652 0.656 0.652 0.652 0.653 0.641 0.642 0.636 0.632 0.633 0.728 0.642 0.641 0.642 0.631 0.632 0.635 0.631 0.632 0.635 0.631 0.643 0.630 0.632 0.634 0.636 0.633 0.534 0.534 0.646 0.646 0.646 0.632 0.634 0.546 0.644 0.644 0.644 0.644	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.560 0.560 0.561 0.559 0.626 0.625 0.629 0.734 0.731 0.733 0.682 0.682 0.676 0.682 0.682 0.676 0.682 0.562 0.588 0.562 0.562 0.562 0.542 0.542 0.647 0.642 0.642 0.656 0.729 0.728 0.726 0.642 0.641 0.642 0.656 0.642 0.641 0.642 0.656 0.642 0.641 0.642 0.633 0.643 0.531 0.728 0.736 0.643 0.631 0.633 0.633 0.631 0.631 0.633 0.633 0.632 0.631 0.632 0.633 0.633 0.634 0.634 0.634 0.646 0.646 0.634 0.636 0.648 0.648 0.648 0.649 0.649	979	0.632	0.631	0.632	0.626	0.627
0.626 0.625 0.629 0.734 0.734 0.731 0.733 0.682 0.682 0.682 0.676 0.682 0.562 0.558 0.546 0.546 0.547 0.651 0.652 0.556 0.652 0.651 0.656 0.653 0.729 0.728 0.726 0.642 0.643 0.642 0.635 0.643 0.643 0.643 0.632 0.644 0.644 0.644 0.646 0.646 0.646 0.646 0.640 0.649 0.649 0.530 0.530 0.649 0.649 0.646 0.646 0.649 0.649 0.640 0.640 0.649 0.649 0.530 0.530 0.649 0.649 0.560 0.560 0.649 0.649 0.649 0.649 0.649 0.649 0.649 0.649 0.649 0.649<	625	0.560	0.560	0.561	0.559	0.560
0.734 0.734 0.734 0.733 0.682 0.682 0.682 0.676 0.562 0.562 0.558 0.676 0.546 0.546 0.547 0.656 0.546 0.546 0.546 0.547 0.621 0.652 0.651 0.656 0.729 0.728 0.726 0.634 0.642 0.633 0.534 0.534 0.633 0.631 0.631 0.632 0.646 0.646 0.640 0.647 0.630 0.534 0.715 0.713 0.713 0.646 0.646 0.646 0.646 0.646 0.630 0.647 0.646 0.646 0.648 0.649 0.534 0.671 0.671 0.609 0.685 0.562 0.566 0.671 0.690 0.671 0.687 0.683 0.673 0.688 0.674	089	0.626	0.626	0.625	0.629	0.631
0.682 0.682 0.676 0.562 0.562 0.558 0.546 0.546 0.547 0.651 0.652 0.558 0.651 0.654 0.546 0.652 0.651 0.656 0.729 0.728 0.726 0.642 0.641 0.642 0.635 0.534 0.533 0.534 0.531 0.530 0.530 0.532 0.532 0.642 0.643 0.630 0.635 0.646 0.646 0.637 0.534 0.646 0.646 0.640 0.640 0.648 0.646 0.640 0.640 0.685 0.646 0.640 0.640 0.687 0.684 0.683 0.672 0.688 0.689 0.640 0.640 0.689 0.689 0.640 0.640 0.689 0.679 0.640 0.641 0.644 0.644 0.644 0.644<	635	0.734	0.734	0.731	0.733	0.735
0.562 0.562 0.562 0.558 0.546 0.546 0.546 0.547 0.651 0.652 0.651 0.656 0.729 0.728 0.726 0.729 0.728 0.726 0.642 0.641 0.642 0.635 0.642 0.643 0.632 0.633 0.530 0.534 0.532 0.632 0.631 0.631 0.630 0.632 0.631 0.631 0.630 0.632 0.646 0.646 0.640 0.640 0.647 0.648 0.640 0.640 0.687 0.683 0.640 0.640 0.688 0.684 0.689 0.640 0.689 0.684 0.683 0.641 0.641 0.641 0.645 0.645 0.654 0.654 0.650 0.650 0.654 0.654 0.650 0.650 0.654 0.654 0.650 0.	640	0.682	0.682	0.682	0.676	0.677
0.546 0.546 0.546 0.547 0.651 0.652 0.651 0.656 0.729 0.728 0.726 0.642 0.641 0.642 0.635 0.642 0.633 0.534 0.531 0.534 0.533 0.534 0.531 0.631 0.631 0.630 0.635 0.631 0.631 0.630 0.532 0.631 0.631 0.630 0.532 0.715 0.715 0.713 0.713 0.646 0.646 0.640 0.635 0.647 0.646 0.640 0.630 0.648 0.653 0.500 0.500 0.671 0.671 0.669 0.679 0.687 0.684 0.683 0.679 0.687 0.689 0.670 0.670 0.687 0.684 0.683 0.671 0.694 0.644 0.644 0.644 0.654 0.654 0.	645	0.562	0.562	0.562	0.558	0.559
0.651 0.652 0.651 0.656 0.729 0.729 0.728 0.726 0.642 0.641 0.642 0.635 0.534 0.534 0.531 0.631 0.539 0.530 0.532 0.532 0.631 0.631 0.630 0.532 0.631 0.631 0.630 0.635 0.715 0.715 0.713 0.713 0.646 0.646 0.640 0.635 0.647 0.646 0.640 0.630 0.648 0.649 0.500 0.500 0.649 0.649 0.500 0.500 0.671 0.671 0.669 0.679 0.685 0.684 0.683 0.679 0.687 0.679 0.670 0.688 0.689 0.679 0.699 0.670 0.671 0.644 0.644 0.644 0.654 0.654 0.652 0.659 0.669<	059	0.546	0.546	0.546	0.547	0.548
0.729 0.729 0.729 0.729 0.729 0.728 0.725 0.635 0.632 0.632 0.632 0.633 0.633 0.631 0.631 0.632 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.640 0.672 <th< td=""><td>929</td><td>0.651</td><td>0.652</td><td>0.651</td><td>0.656</td><td>0.657</td></th<>	929	0.651	0.652	0.651	0.656	0.657
0.642 0.641 0.642 0.635 0.534 0.533 0.534 0.531 0.530 0.530 0.532 0.532 0.631 0.631 0.631 0.635 0.631 0.631 0.630 0.635 0.715 0.713 0.713 0.646 0.646 0.640 0.646 0.646 0.640 0.649 0.646 0.640 0.649 0.534 0.530 0.672 0.652 0.566 0.673 0.672 0.574 0.685 0.683 0.672 0.687 0.689 0.672 0.689 0.670 0.672 0.680 0.671 0.672 0.681 0.672 0.672 0.692 0.674 0.644 0.644 0.644 0.644 0.654 0.654 0.655 0.654 0.654 0.656 0.649 0.649 0.646	099	0.729	0.729	0.728	0.726	0.729
0.534 0.533 0.534 0.531 0.530 0.530 0.532 0.532 0.631 0.631 0.630 0.532 0.715 0.713 0.713 0.713 0.646 0.646 0.646 0.640 0.533 0.534 0.534 0.530 0.499 0.499 0.500 0.562 0.566 0.671 0.671 0.669 0.672 0.672 0.685 0.684 0.683 0.679 0.679 0.0490 0.489 0.490 0.487 0.671 0.0479 0.644 0.641 0.645 0.650 0.054 0.654 0.652 0.650 0.650 0.056 0.654 0.652 0.650 0.650 0.469 0.654 0.652 0.650 0.650 0.469 0.469 0.469 0.466 0.650 0.560 0.560 0.466 0.466 0.650 0.651	999	0.642	0.641	0.642	0.635	0.636
0.530 0.530 0.532 0.631 0.631 0.635 0.646 0.646 0.646 0.533 0.534 0.530 0.546 0.646 0.646 0.533 0.534 0.530 0.5499 0.500 0.500 0.562 0.563 0.566 0.673 0.673 0.560 0.673 0.563 0.566 0.674 0.674 0.673 0.685 0.679 0.679 0.687 0.683 0.679 0.490 0.489 0.487 0.490 0.489 0.487 0.490 0.489 0.487 0.490 0.487 0.487 0.644 0.644 0.641 0.645 0.654 0.654 0.645 0.645 0.650 0.559 0.650 0.650 0.465 0.469 0.466 0.466 0.445 0.446 0.446 0.446	0/9	0.534	0.533	0.534	0.531	0.531
0.631 0.631 0.635 0.715 0.713 0.713 0.646 0.646 0.640 0.533 0.534 0.530 0.649 0.649 0.562 0.566 0.687 0.669 0.566 0.566 0.687 0.683 0.579 0.679 0.689 0.679 0.679 0.679 0.680 0.679 0.679 0.679 0.680 0.679 0.679 0.679 0.680 0.679 0.679 0.679 0.681 0.682 0.679 0.679 0.682 0.679 0.679 0.679 0.644 0.649 0.649 0.649 0.644 0.644 0.644 0.645 0.654 0.654 0.655 0.656 0.654 0.654 0.655 0.645 0.654 0.654 0.466 0.466 0.654 0.469 0.469 0.466 0.654<	675	0.530	0.530	0.530	0.532	0.533
0.715 0.713 0.713 0.646 0.646 0.640 0.640 0.646 0.646 0.640 0.640 0.533 0.534 0.534 0.530 0.499 0.499 0.500 0.500 0.562 0.563 0.566 0.672 0.671 0.669 0.672 0.672 0.685 0.684 0.683 0.679 0.685 0.679 0.679 0.679 0.490 0.489 0.490 0.487 0.490 0.489 0.490 0.487 0.547 0.546 0.551 0.649 0.641 0.645 0.551 0.654 0.654 0.650 0.650 0.654 0.654 0.652 0.650 0.654 0.655 0.650 0.650 0.656 0.559 0.650 0.660 0.445 0.446 0.446 0.446 0.657 0.668 0.648 0.	089	0.631	0.631	0.630	0.635	0.636
0.646 0.646 0.646 0.640 0.533 0.534 0.530 0.499 0.500 0.500 0.499 0.502 0.506 0.671 0.663 0.672 0.673 0.679 0.679 0.685 0.684 0.683 0.679 0.490 0.489 0.487 0.487 0.479 0.479 0.479 0.479 0.547 0.549 0.479 0.479 0.547 0.546 0.551 0.654 0.641 0.645 0.654 0.642 0.650 0.654 0.652 0.650 0.654 0.652 0.652 0.654 0.654 0.652 0.659 0.650 0.650 0.659 0.659 0.650 0.659 0.650 0.660 0.445 0.466 0.466 0.658 0.586 0.589 0.607 0.608 0.648	589	0.715	0.715	0.713	0.713	0.714
0.533 0.534 0.530 0.499 0.500 0.500 0.499 0.562 0.566 0.671 0.673 0.566 0.687 0.684 0.683 0.672 0.688 0.689 0.672 0.679 0.580 0.579 0.487 0.487 0.490 0.489 0.490 0.487 0.547 0.549 0.479 0.479 0.644 0.641 0.645 0.650 0.654 0.654 0.650 0.650 0.654 0.654 0.650 0.650 0.654 0.645 0.650 0.650 0.654 0.654 0.650 0.650 0.659 0.650 0.645 0.650 0.445 0.446 0.446 0.446 0.445 0.446 0.446 0.446 0.658 0.586 0.589 0.648 0.607 0.607 0.601 0.601 0.505<	069	0.646	0.646	0.646	0.640	0.640
0.499 0.499 0.500 0.500 0.562 0.563 0.565 0.566 0.685 0.671 0.669 0.672 0.685 0.673 0.679 0.679 0.580 0.579 0.679 0.679 0.490 0.487 0.487 0.487 0.479 0.479 0.479 0.479 0.547 0.546 0.551 0.644 0.641 0.645 0.654 0.645 0.650 0.550 0.551 0.650 0.540 0.645 0.650 0.654 0.652 0.650 0.559 0.550 0.554 0.469 0.469 0.466 0.445 0.445 0.446 0.491 0.492 0.496 0.586 0.589 0.589 0.607 0.607 0.601 0.505 0.506 0.500	969	0.533	0.534	0.534	0.530	0.530
0.562 0.563 0.566 0.671 0.669 0.672 0.685 0.684 0.683 0.679 0.680 0.579 0.674 0.679 0.580 0.579 0.574 0.677 0.490 0.489 0.487 0.487 0.479 0.478 0.479 0.479 0.547 0.546 0.551 0.645 0.644 0.644 0.641 0.645 0.560 0.559 0.554 0.650 0.560 0.559 0.554 0.650 0.469 0.469 0.466 0.466 0.445 0.445 0.446 0.446 0.491 0.492 0.496 0.589 0.651 0.601 0.601 0.601 0.605 0.505 0.500 0.500	700	0.499	0.499	0.500	0.500	0.501
0.671 0.672 0.683 0.672 0.685 0.684 0.683 0.679 0.580 0.579 0.579 0.574 0.490 0.489 0.487 0.487 0.479 0.489 0.487 0.487 0.547 0.547 0.546 0.551 0.644 0.641 0.645 0.645 0.550 0.559 0.550 0.550 0.469 0.469 0.466 0.466 0.445 0.445 0.446 0.446 0.586 0.585 0.589 0.651 0.651 0.648 0.586 0.585 0.589 0.601 0.601 0.601 0.605 0.505 0.500	705	0.562	0.563	0.562	0.566	0.567
0.685 0.684 0.683 0.679 0.580 0.579 0.574 0.574 0.490 0.489 0.490 0.487 0.479 0.479 0.479 0.479 0.547 0.547 0.546 0.551 0.654 0.654 0.645 0.650 0.560 0.559 0.554 0.554 0.469 0.469 0.466 0.466 0.445 0.445 0.446 0.446 0.586 0.586 0.589 0.589 0.651 0.652 0.589 0.589 0.586 0.586 0.589 0.589 0.601 0.607 0.608 0.601 0.505 0.505 0.500 0.500	710	0.671	0.671	0.669	0.672	0.674
0.580 0.579 0.574 0.490 0.489 0.490 0.487 0.479 0.479 0.479 0.479 0.547 0.547 0.546 0.551 0.644 0.641 0.645 0.650 0.560 0.559 0.554 0.554 0.469 0.469 0.466 0.466 0.445 0.445 0.446 0.446 0.586 0.586 0.589 0.589 0.651 0.652 0.648 0.648 0.586 0.586 0.589 0.589 0.601 0.602 0.601 0.500	715	0.685	0.684	0.683	0.679	0.681
0.490 0.489 0.490 0.487 0.479 0.478 0.479 0.547 0.546 0.551 0.644 0.641 0.645 0.654 0.654 0.652 0.654 0.652 0.650 0.560 0.559 0.554 0.469 0.469 0.466 0.445 0.446 0.446 0.491 0.492 0.496 0.586 0.586 0.589 0.651 0.650 0.648 0.601 0.602 0.601 0.505 0.505 0.500	720	0.580	0.579	0.579	0.574	0.574
0.479 0.478 0.479 0.547 0.546 0.541 0.644 0.641 0.645 0.654 0.654 0.651 0.654 0.654 0.652 0.654 0.652 0.650 0.560 0.559 0.554 0.469 0.469 0.466 0.445 0.445 0.446 0.491 0.492 0.496 0.586 0.585 0.589 0.651 0.650 0.601 0.605 0.505 0.500	725	0.490	0.489	0.490	0.487	0.488
0.547 0.546 0.551 0.644 0.641 0.645 0.654 0.654 0.652 0.654 0.652 0.650 0.560 0.559 0.554 0.469 0.469 0.466 0.445 0.446 0.446 0.491 0.492 0.496 0.586 0.585 0.589 0.651 0.607 0.608 0.601 0.505 0.505 0.500 0.500	730	0.479	0.479	0.478	0.479	0.481
0.644 0.641 0.645 0.654 0.654 0.652 0.650 0.560 0.559 0.554 0.650 0.469 0.469 0.466 0.466 0.445 0.445 0.446 0.446 0.491 0.492 0.496 0.496 0.586 0.586 0.589 0.589 0.607 0.607 0.604 0.601 0.505 0.505 0.500 0.500	735	0.547	0.547	0.546	0.551	0.551
0.654 0.654 0.652 0.650 0.560 0.559 0.554 0.554 0.469 0.469 0.466 0.466 0.445 0.445 0.446 0.446 0.491 0.492 0.492 0.496 0.586 0.585 0.589 0.651 0.650 0.648 0.648 0.605 0.607 0.606 0.601 0.505 0.505 0.500 0.500	740	0.644	0.644	0.641	0.645	0.647
0.560 0.559 0.554 0.469 0.469 0.469 0.466 0.445 0.445 0.446 0.446 0.491 0.492 0.496 0.496 0.586 0.585 0.589 0.589 0.607 0.607 0.606 0.601 0.505 0.505 0.500 0.500	745	0.654	0.654	0.652	0.650	0.651
0.469 0.469 0.469 0.466 0.445 0.445 0.446 0.446 0.491 0.492 0.492 0.496 0.586 0.586 0.589 0.589 0.651 0.650 0.648 0.648 0.605 0.607 0.606 0.601 0.505 0.505 0.505 0.500	750	0.560	0.559	0.559	0.554	0.554
0.445 0.445 0.446 0.446 0.491 0.492 0.492 0.496 0.586 0.586 0.589 0.589 0.651 0.650 0.648 0.648 0.605 0.607 0.606 0.601 0.505 0.505 0.505 0.500	755	. 0.469	0.469	0.469	0.466	0.466
0.491 0.492 0.492 0.496 0.586 0.585 0.589 0.651 0.650 0.648 0.648 0.605 0.607 0.606 0.601 0.505 0.505 0.500 0.500	109	0.445	0.445	0.446	0.446	0.446
0.586 0.585 0.589 0.651 0.650 0.648 0.605 0.607 0.606 0.505 0.505 0.500	292	0.491	0.492	0.492	0.496	0.496
0.651 0.650 0.648 0.648 0.605 0.607 0.606 0.601 0.505 0.505 0.500 0.500	770	0.586	0.586		0.589	0.590
0.605 0.607 0.606 0.601 0.505 0.505 0.505 0.500	775	0.651	0.650	0.648	0.648	0.650
0.505 0.505 0.505 0.500	780	0.605	0.607	909:0	0.601	0.601
	S8 <i>L</i>	0.505	0.505	0.505	0.500	0.500

	CARY 5G SPEC	TRAPHOTOM	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	AFB (AL/OEO)	
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790		0.435		0.433	0.433
795	0.424	0.424	0.423	0.424	0.425
800		0.468		0.471	0.472
805		0.553		0.556	0.558
810		0.620	0.617	0.619	0.622
815		0.598		0.593	0.592
820		0.508		0.504	0.503
825		0.430		0.428	0.428
830		0.396	0.398	0.397	0.396
835		0.410		0.412	0.413
840		0.466		0.470	0.470
845		0.546		0.549	0.548
850		0.589		0.590	0.590
855		0.558		0.548	0.549
098		0.469	0.465	0.461	0.459
865		0.387	0.385	0.388	0.385
870		0.351		0.348	0.350
875		0.376		0.375	0.376
880		0.404	0.403	0.404	0.406
885		0.451		0.453	0.454
890		0.496		0.496	0.498
895		0.506		0.504	0.505
006		0.466		0.463	0.463
905		0.408		0.404	0.404
910		0.358		0.356	0.356
915		0.336		0.335	0.335
920		0.338	0.337	0.338	0.338
925		0.362		0.363	0.364
930		0.408		0.410	0.411
935		0.464	0.464	0.467	0.469
940		0.507		0.507	0.509
945		0.504		0.500	0.502
950	0.456	0.456	0.456	0.452	0.453

<u>a</u>	ERKIN ELMER	LAMBDA 9 - F	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	AL/OEO)	
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.445	0.438	0.434	0.435	0.433
455	0.529	0.531	0.527	0.522	0.524
460	0.458	0.462	0.457	0.461	0.455
465	0.539	0.526	0.524	0.517	0.521
470	0.512	0.524	0.518	0.522	0.516
475	0.516	0.503	0.500	0.497	0.498
480	0.589	0.592	0.588	0.585	0.585
485	0.520	0.524	0.518	0.522	0.515
490	0.598	0.582	0.580	0.572	0.577
495	909'0	0.619	0.613	0.614	0.610
200	0.555	0.552	0.547	0.549	0.544
202	0.645	0.632	0.630	0.622	0.627
510	0.624	0.637	0.631	0.634	0.628
515	0.575	0.569	0.564	0.565	0.561
520	0.673	0.658	0.655	0.646	0.653
525	0.648	0.664	0.657	099'0	0.653
230	0.581	0.580	0.574	0.577	0.571
535	0.673	0.653	0.651	0.641	0.648
540	0.685	0.698	0.692	0.692	0.688
545	0.592	0.596	0.589	0.595	0.586
550	0.641	0.623	0.620	0.613	0.617
555	0.721	0.722	0.718	0.711	0.714
260	0.624	0.641	0.633	0.640	0.630
595	0.587	0.582	0.576	0.577	0.573
570	0.693	0.673	0.671	0.660	0.668
575	0.700	0.714	0.708	0.708	0.704
280	0.588	0.599	0.591	0.599	0.588
585	0.601	0.587	0.582	0.579	0.580
590	0.716	0.701	869.0	0.687	0.695
595	0.685	0.704	969:0	00.700	0.693
009	0.572	0.584	0.575	0.583	0.572
909	0.590	0.574	0.570	0.567	0.567
610	0.713	0.693	0.691	0.679	0.688
615	0.702	0.719	0.712	0.713	0.708

	PERKIN ELMEI	R LAMBDA 9 -	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	AL/OEO)	
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.581	0.598	0.589	0.598	0.586
625	0.559	0.552	0.546	0.546	0.544
989	0.663	0.640	0.637	0.626	0.634
635	0.726	0.732	0.726	0.720	0.723
640	0.620	0.645	9690	0.646	0.633
645	0.529	0.537	0.529	0.536	0.527
929	0.567	0.548		0.540	0.541
655	069.0	0.667	0.665	0.651	0.661
099	0.704	0.716	0.710	0.708	0.706
999	0.583	0.605		909.0	0.594
029	0.511	0.516	0.509	0.514	0.506
675	0.552	0.535	0.531	0.526	0.528
089	899.0	0.647	0.644	0.632	0.641
685	0.697	0.707	0.701	0.697	0.698
069	0.587	0.612	0.603	0.612	0.599
569	0.499	0.508	0.500	0.508	0.498
200	0.506	0.495	0.490	0.489	0.488
705	0.599	0.575	0.572	0.562	0.570
710	0.688	0.680		0.665	0.672
715	0.640	0.661	0.653	0.656	0.650
720	0.526	0.546		0.547	0.535
725	0.468	0.472		0.470	0.463
730	0.493	0.481	0.477	0.474	0.474
735	0.584	0.564	0.561	0.551	0.559
740		0.655		0.642	0.648
745		0.635		0.631	0.624
750	0.505	0.527		0.528	0.515
755	0.443	0.449			0.440
160		0.442	0.438		0.435
765		0.503			0.497
770	0.619	0.602			0.596
775					0.638
780	0.554				0.567
785	0.460	0.476	0.468	0.477	0.466

wavelength (mm) 790 790 800 800 810 815 815 820 820 830	(trans.) (trans.) (0.417 0.434 0.501 0.588 0.617 0.552 0.460 0.403 0.393 0.393 0.393	Rep. 2 (trans.) (120) (1	SAMPLE 3 Rep. 3 (trans.) 0.414 0.420 0.479 0.570 0.618 0.666 0.406 0.406	Rep. 4 (trans.) 0.418 0.418 0.471 0.559 0.613 0.572 0.613	Rep. 5 (trans.) 0.412 0.417 0.567 0.615
wavelength (nm) (nm) 790 790 800 800 815 810 815 820 820 820 820 835 835	(trans.) (10.417 0.417 0.434 0.501 0.588 0.617 0.552 0.460 0.403 0.393 0.393 0.393	(trans.) (trans.) (10.420 0.424 0.428 0.623 0.623 0.623 0.623 0.6391 0.411 0.418 0.485 0.566	(trans.) (trans.) (0.414 0.420 0.479 0.570 0.618 0.566 0.406 0.406	(trans.) (trans.) (0.418 0.418 0.613 0.613 0.613 0.613	(trans.) (trans.) 0.412 0.417 0.477 0.615
(mm) 790 795 800 805 810 815 820 825 825 835	(trans.) 0.417 0.434 0.501 0.588 0.617 0.617 0.652 0.460 0.403 0.393 0.428 0.428	(trans.) 0.420 0.424 0.482 0.572 0.623 0.623 0.6418 0.485 0.485	(trans.) 0.414 0.420 0.479 0.570 0.618 0.566 0.406 0.406	(trans.) 0.418 0.418 0.471 0.613 0.613 0.613 0.613	(trans.) 0.412 0.417 0.477 0.615
790 795 800 805 810 815 820 830 835	0.417 0.434 0.501 0.588 0.617 0.617 0.460 0.403 0.393 0.428 0.428	0.420 0.424 0.482 0.572 0.574 0.480 0.411 0.418 0.418	0.414 0.420 0.479 0.570 0.618 0.566 0.471 0.406	0.418 0.471 0.559 0.613 0.572 0.411	0.412 0.417 0.567 0.615
795 800 805 810 815 820 825 830	0.434 0.501 0.588 0.617 0.552 0.460 0.403 0.393 0.393 0.499	0.424 0.482 0.572 0.623 0.574 0.480 0.411 0.391 0.418	0.420 0.479 0.570 0.618 0.566 0.406 0.406	0.418 0.559 0.613 0.572 0.481	0.417 0.477 0.567 0.615
800 805 810 815 820 830 835	0.501 0.588 0.617 0.552 0.403 0.393 0.428 0.428	0.482 0.572 0.623 0.574 0.480 0.391 0.418 0.418	0.479 0.570 0.618 0.566 0.406 0.387	0.471 0.559 0.613 0.572 0.481	0.567
805 810 815 820 825 830 835	0.588 0.617 0.552 0.460 0.428 0.428 0.428	0.572 0.623 0.623 0.480 0.391 0.418 0.418	0.570 0.618 0.566 0.471 0.387	0.559 0.613 0.572 0.481 0.411	0.567
810 815 820 825 830 835	0.617 0.552 0.460 0.403 0.428 0.428 0.499	0.623 0.574 0.480 0.391 0.485 0.502	0.618 0.566 0.471 0.387	0.613 0.572 0.481 0.411	0.615
815 820 825 830 835	0.552 0.460 0.403 0.393 0.428 0.499	0.574 0.480 0.411 0.391 0.418 0.485 0.565	0.566 0.471 0.406 0.387	0.572	1730
820 825 830 835	0.460 0.403 0.393 0.428 0.499 0.573	0.480 0.411 0.391 0.418 0.485 0.566	0.471	0.481	0.304
825 830 835	0.403 0.393 0.428 0.499 0.573	0.411 0.391 0.418 0.485 0.566	0.406	0.411	0.470
835	0.393 0.428 0.499 0.573	0.391 0.418 0.485 0.566	0.387	885 0	0.403
835	0.428 0.499 0.573	0.418		V.Jour	0.385
	0.499	0.485	0.415	0.411	0.413
840	0.573	0.566	0.483	0.474	0.481
845		0 592	0.564	0.552	0.562
820	0.580	17/7/1	0.590	0.584	0.587
855	0.510	0.536	0.530	0.534	0.529
098	0.425	0.446	0.439	0.447	0.438
865	0.421	0.414	0.402	0.412	0.397
870	0.383	0.369	0.362	0.367	0.358
875	0.384	0.363	0.355	0.360	0.351
088	0.419	0.391	0.381	0.385	0.377
885	0.476	0.444	0.432	0.435	0.427
068	0.531	0.503	0.489	0.492	0.482
895	0.540	0.527	0.511	0.517	0.502
006	0.490	0.490	0.473	0.484	0.466
905	0.420	0.421	0.407	0.417	0.401
910	0.364	0.362	0.350	0.360	0.345
915	0.341	0.333	0.322	0.330	0.318
920	0.348	0.333	0.323	0.329	0.318
925	0.377	0.356	0.346	0.350	0.341
930	0.430	0.402	0.391	0.393	0.386
935	0.494	0.464	0.451	0.453	0.445
940	0.536	0.515	0.501	0.504	0.493
945	0.526	0.519	0.503	0.511	0.496
950	0.473	0.474	0.458	0.470	0.452

	HITACHI U-2000	- POLYCAST 7	TECHNOLOGY	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	
		8	SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.441	0.457	0.458	0.456	0.45
455	0.539	0.531	0.537	0.538	0.537
460	0.472	0.464	0.459	0.46	0.464
465	0.523	0.544	0.553	0.551	0.541
470	0.541	0.513	0.509	0.511	0.522
475	0.503	0.526	0.529	0.526	0.518
480	0.604	0.59	0.594	0.597	0.598
485	0.535	0.524	0.521	0.521	0.526
490	0.58	0.605	0.614	0.611	0.598
495	0.636	909.0	909'0	0.61	0.618
200	0.558	0.561	0.559	0.558	0.558
505	0.63	0.652	0.661	0.659	0.647
510	0.658	0.624	0.623	0.627	0.638
515	0.574	0.582	0.58	0.578	0.576
520	0.656	619.0	0.689	0.687	0.675
525	0.687	0.65	0.649	0.652	0.664
530	0.585	0.587	0.584	0.584	0.585
535	0.649	0.68	0.69	0.687	0.672
540	0.719	0.685	0.687	0.691	0.7
545	609.0	0.595	0.59	0.591	0.598
250	0.615	0.648	0.655	0.652	0.637
555	0.733	0.723	0.732	0.733	0.731
995	0.664	0.626	0.621	0.625	0.64
595	0.582	0.594	0.593	0.592	0.588
570	999:0	0.699	0.70	0.707	0.691
575	0.736	0.697	0.7	0.705	0.715
580	0.615	0.59	0.583	0.587	0.597
585	0.58	909:0	09:0	909.0	0.596
590	969.0	0.722	0.733	0.731	0.717
595	0.728	0.684	0.682		0.702
009	0.597	0.576	0.569		0.583
905	0.568	0.594	0.596		0.584
610	989.0	0.716	0.729		0.709
615	0.74	0.7	0.7	0.707	0.717

Rep. 1 Rep. 2 (trans.)		_
Rep. 1 Rep. 1 (trans.) (SAMPLE 3	
(trans.) (trans.) (trans.) (trans.) (trans.) (.615 0.615 0.628 0.671 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.636 0.6	Rep. 2 Rep. 3	Rep. 4 Rep. 5
0.615 0.548 0.626 0.742 0.671 0.537 0.635 0.636 0.636 0.636 0.636 0.636 0.636 0.636 0.636 0.636 0.637 0.637 0.637 0.638 0.636 0.	(trans.) (trans.)	J
0.548 0.626 0.742 0.671 0.537 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.635 0.636 0.648	0.583 0.576	0.581 0.593
0.626 0.742 0.671 0.671 0.637 0.635 0.735 0.735 0.635 0.638 0.638 0.648 0.658	0.563 0.562	0.561 0.556
0.742 0.671 0.546 0.637 0.635 0.735 0.638 0.638 0.522 0.638 0.634 0.648		0.672 0.654
0.671 0.546 0.537 0.632 0.633 0.519 0.522 0.628 0.635 0.635 0.634 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.686 0.	0.729 0.736	0.74 0.738
0.546 0.537 0.655 0.655 0.635 0.628 0.628 0.635 0.635 0.635 0.634 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648		0.624 0.641
0.537 0.635 0.735 0.638 0.628 0.628 0.628 0.635 0.635 0.634 0.674 0.684 0.684 0.684 0.674 0.684 0.684 0.684 0.674 0.674 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648	0.535 0.529	0.531 0.538
0.655 0.735 0.635 0.628 0.628 0.635 0.635 0.635 0.635 0.635 0.636 0.636 0.636 0.636 0.636 0.636 0.637 0.648 0.648 0.656 0.656 0.648 0.656 0.		0.568 0.557
0.735 0.633 0.522 0.628 0.635 0.635 0.635 0.635 0.634 0.648 0.542 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.656 0.656	0.691 0.701	0.699
0.63 0.522 0.628 0.628 0.635 0.635 0.635 0.636 0.636 0.684 0.684 0.684 0.684 0.684 0.469 0.477 0.469 0.542 0.648 0.648 0.656		0.714 0.719
0.519 0.522 0.628 0.635 0.635 0.516 0.488 0.555 0.674 0.684 0.684 0.684 0.684 0.684 0.477 0.469 0.542 0.542 0.648 0.656 0.636 0.636	0.588 0.578	0.587 0.603
0.522 0.628 0.635 0.635 0.516 0.548 0.684 0.684 0.684 0.684 0.684 0.684 0.684 0.648 0.648 0.648 0.648 0.648 0.648 0.656 0.648 0.656	0.515 0.509	0.511 0.516
0.628 0.635 0.635 0.635 0.488 0.684 0.684 0.684 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.656	0.554 0.556	0.553 0.542
0.72 0.635 0.516 0.488 0.674 0.684 0.684 0.469 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.656	0.668 0.677	0.675 0.656
0.635 0.516 0.488 0.555 0.674 0.684 0.568 0.542 0.648 0.648 0.648 0.648 0.648 0.648 0.648 0.656	0.699	0.708
0.516 0.488 0.555 0.674 0.684 0.568 0.477 0.469 0.542 0.648 0.656 0.434 0.482 0.482 0.482	0.59 0.582	0.589 0.606
0.488 0.674 0.684 0.684 0.469 0.469 0.648 0.656 0.482 0.482 0.482 0.482	0.502 0.494	0.498 0.506
0.555 0.674 0.684 0.568 0.477 0.469 0.648 0.656 0.482 0.482 0.482 0.482 0.482	0.507 0.506	0.505 0.499
0.674 0.684 0.568 0.469 0.542 0.648 0.656 0.455 0.482 0.482 0.482 0.482		0.601 0.582
0.684 0.568 0.477 0.469 0.542 0.656 0.546 0.455 0.482 0.482 0.482	0.689	0.7 0.688
0.568 0.477 0.469 0.542 0.656 0.546 0.455 0.482 0.482 0.482		
0.477 0.469 0.542 0.648 0.656 0.546 0.455 0.482 0.482 0.584	0.531 0.522	0.528 0.543
0.469 0.542 0.648 0.656 0.546 0.455 0.434 0.482 0.584	0.471 0.465	0.467 0.472
0.542 0.648 0.656 0.546 0.455 0.482 0.482 0.584	0.493 0.493	0.492 0.484
0.648 0.656 0.546 0.455 0.482 0.584 0.655		0.59 0.571
0.656 0.546 0.455 0.434 0.584 0.655	0.664 0.673	
0.546 0.455 0.434 0.482 0.584 0.655	0.619 0.617	
0.455 0.434 0.482 0.584 0.655	0.511 0.5	0.507 0.523
0.434 0.482 0.584 0.655	0.445 0.437	0.44 0.447
0.482		0.445 0.441
0.584	0.519 0.524	0.521 0.506
0.655	0.619 0.629	
7070		0
0.004		
785 0.495 0.467	0.467 0.457	0.463 0.477

	HITACHI U-200	0 - POLYCAST	TECHNOLOGY	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	7
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790	0.423	0.419	0.413	0.416	0.42
795	0.415	0.433	0.43	0.43	0.425
800	0.461	0.497	0.501	0.499	0.484
805	0.55	0.586		0.593	0.576
810	0.625	0.621		0.632	0.627
815	0.595	0.558		0.561	0.573
820	0.5	0.467	0.458	0.464	0.479
825		0.408		0.404	0.411
830)	0.395	0	0.392	0.391
835	0.403	0.428	0.429	0.428	0.418
840		0.497		0.501	0.485
845		0.573	0.582	0.581	0.565
850		0.585		0.593	0.593
855		0.517		0.518	0.531
860		0.429	0.421	0.427	0.44
865	0.379	0.365		0.362	0.37
870		0.344	0.339	0.341	0.342
875		0.365		0.364	0.358
880	0	0.416	0.419	0.417	0.405
885	0.45	0.483	0.49	0.489	0.473
890	0.516	0.53	0.538	0.538	0.529
895		0.512	0.513	0.518	0.523
900	0.478	0.445	0.439	0.445	0.458
905		0.375		0.373	0.385
910		0.332)	0.329	0.336
915		0.324		0.322	0.323
920		0.341		0.34	0.336
925		0.379	0.382	0.381	0.37
930		0.441	0.446	0.445	0.429
935		0.501	0.51	0.509	0.495
940	0	0.525	0.531	0.533	0.529
945		0.493			0.506
950	0.465	0.431	0.425		0.445

wavelength Rep. 1 Rep. 2 Rep. 3 Rep. 4 Rep. 4 Rep. 5 Rep. 4 Rep. 5 Rep. 4 Rep. 5 Rep. 4 Rep. 4 Rep. 5 Rep. 3 Rep. 4 Rep. 5 Rep. 3 Rep. 3 Rep. 4 Rep. 5 Rep. 5 Rep. 3 Rep. 3 Rep. 4 Rep. 5 Rep. 3 Rep. 4 Rep. 5 Rep	0	PTRONICS MO	DEL 736 RAD	OPTRONICS MODEL 736 RADIOMETER-TEXSTAR, INC.	STAR,INC.	
Rep. 1 Rep. 2 Rep. 3 Rep. 4 1 (trans.)				SAMPLE 3		
(trans.) (trans.)	wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
0.470 0.473 0.472 0.464 0.522 0.524 0.508 0.491 0.495 0.514 0.508 0.491 0.495 0.519 0.513 0.534 0.537 0.522 0.530 0.537 0.532 0.531 0.518 0.530 0.532 0.531 0.518 0.535 0.532 0.531 0.518 0.535 0.532 0.531 0.531 0.600 0.600 0.600 0.531 0.538 0.623 0.632 0.632 0.638 0.538 0.646 0.647 0.649 0.649 0.649 0.649 0.647 0.648 0.649 0.644 0.648 0.648 0.648 0.649 0.644 0.648 0.648 0.648 0.659 0.651 0.649 0.649 0.649 0.644 0.648 0.650 0.651 0.644 0.644 0.644 0.644	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.522 0.525 0.514 0.508 0.491 0.495 0.504 0.495 0.534 0.534 0.513 0.537 0.526 0.530 0.537 0.526 0.531 0.538 0.532 0.538 0.536 0.532 0.538 0.537 0.538 0.531 0.600 0.600 0.600 0.600 0.600 0.600 0.602 0.632 0.538 0.646 0.647 0.632 0.630 0.646 0.647 0.632 0.646 0.646 0.649 0.640 0.640 0.646 0.649 0.640 0.648 0.647 0.669 0.641 0.648 0.648 0.649 0.640 0.648 0.659 0.644 0.648 0.648 0.649 0.649 0.649 0.648 0.640 0.660 0.644 0.648 0.650	450	0.470	0.473	0.472	0.464	0.476
0.491 0.495 0.504 0.495 0.534 0.537 0.519 0.513 0.534 0.537 0.519 0.513 0.537 0.529 0.540 0.538 0.526 0.538 0.535 0.538 0.538 0.538 0.600 0.600 0.633 0.620 0.623 0.623 0.620 0.623 0.638 0.639 0.644 0.669 0.644 0.646 0.649 0.669 0.644 0.668 0.657 0.669 0.644 0.668 0.667 0.669 0.644 0.668 0.667 0.669 0.644 0.668 0.667 0.669 0.644 0.668 0.671 0.672 0.644 0.668 0.672 0.644 0.669 0.644 0.668 0.673 0.672 0.646 0.648 0.648 0.673 0.672 0.646 0.	455	0.522	0.525	0.514	0.508	0.523
0.534 0.537 0.519 0.540 0.537 0.541 0.552 0.540 0.537 0.526 0.518 0.535 0.537 0.532 0.581 0.535 0.537 0.538 0.576 0.600 0.600 0.632 0.620 0.623 0.623 0.620 0.632 0.632 0.620 0.646 0.647 0.648 0.648 0.646 0.669 0.644 0.648 0.648 0.657 0.669 0.644 0.668 0.648 0.657 0.669 0.644 0.668 0.648 0.657 0.669 0.646 0.658 0.648 0.657 0.669 0.646 0.668 0.648 0.657 0.659 0.646 0.658 0.623 0.651 0.652 0.649 0.668 0.623 0.652 0.651 0.649 0.669 0.644 0.653 <t< td=""><td>460</td><td>0.491</td><td>0.495</td><td>0.504</td><td>0.495</td><td>0.506</td></t<>	460	0.491	0.495	0.504	0.495	0.506
0.537 0.541 0.532 0.540 0.530 0.532 0.518 0.518 0.555 0.558 0.581 0.581 0.555 0.558 0.576 0.581 0.600 0.600 0.600 0.583 0.576 0.602 0.602 0.623 0.581 0.620 0.623 0.624 0.629 0.619 0.619 0.646 0.647 0.648 0.648 0.648 0.647 0.669 0.641 0.648 0.648 0.658 0.669 0.641 0.658 0.648 0.659 0.669 0.644 0.648 0.648 0.650 0.669 0.644 0.648 0.648 0.650 0.650 0.644 0.653 0.623 0.650 0.651 0.646 0.639 0.623 0.651 0.652 0.646 0.639 0.623 0.652 0.653 0.646 0.649 0.623	465	0.534	0.537	0.519	0.513	0.533
0.530 0.532 0.526 0.518 0.595 0.597 0.590 0.581 0.555 0.558 0.571 0.588 0.600 0.600 0.583 0.576 0.623 0.625 0.632 0.620 0.624 0.632 0.632 0.619 0.646 0.647 0.649 0.649 0.649 0.646 0.649 0.649 0.640 0.640 0.640 0.669 0.641 0.640 0.640 0.640 0.669 0.641 0.648 0.648 0.641 0.669 0.641 0.658 0.658 0.652 0.663 0.644 0.658 0.658 0.653 0.654 0.648 0.648 0.648 0.654 0.655 0.652 0.653 0.653 0.655 0.651 0.644 0.653 0.653 0.650 0.651 0.644 0.643 0.644 0.650	470	0.537	0.541	0.552	0.540	0.552
0.595 0.597 0.590 0.581 0.555 0.558 0.571 0.558 0.600 0.600 0.583 0.576 0.623 0.625 0.632 0.620 0.586 0.632 0.620 0.620 0.586 0.638 0.594 0.619 0.646 0.649 0.660 0.640 0.667 0.669 0.641 0.640 0.667 0.669 0.644 0.649 0.671 0.669 0.644 0.640 0.672 0.640 0.640 0.640 0.673 0.669 0.644 0.640 0.673 0.644 0.640 0.640 0.674 0.644 0.640 0.640 0.673 0.644 0.640 0.623 0.673 0.623 0.623 0.623 0.650 0.651 0.644 0.623 0.671 0.671 0.671 0.671 0.672 0.	475	0.530	0.532	0.526	0.518	0.535
0.555 0.558 0.571 0.558 0.600 0.600 0.583 0.576 0.623 0.625 0.632 0.620 0.586 0.584 0.581 0.620 0.586 0.647 0.625 0.619 0.646 0.649 0.660 0.640 0.667 0.669 0.644 0.688 0.667 0.669 0.644 0.640 0.667 0.669 0.644 0.640 0.671 0.669 0.644 0.640 0.672 0.644 0.640 0.640 0.673 0.644 0.640 0.640 0.673 0.644 0.640 0.640 0.674 0.644 0.648 0.623 0.623 0.646 0.646 0.623 0.650 0.651 0.646 0.623 0.651 0.651 0.649 0.649 0.652 0.651 0.653 0.653 0.654 0.	480	0.595	0.597	0.590	0.581	0.599
0.600 0.600 0.683 0.576 0.623 0.625 0.632 0.620 0.586 0.588 0.584 0.581 0.646 0.647 0.625 0.619 0.646 0.649 0.660 0.646 0.604 0.609 0.641 0.599 0.667 0.669 0.647 0.648 0.668 0.669 0.644 0.668 0.667 0.669 0.644 0.668 0.671 0.672 0.628 0.628 0.672 0.644 0.638 0.628 0.673 0.674 0.688 0.628 0.653 0.654 0.629 0.629 0.654 0.654 0.629 0.629 0.654 0.654 0.629 0.629 0.654 0.654 0.629 0.629 0.651 0.652 0.621 0.621 0.651 0.652 0.653 0.653 0.651 0.	485	0.555	0.558	0.571	0.558	0.571
0.623 0.625 0.632 0.620 0.586 0.588 0.584 0.581 0.646 0.647 0.625 0.619 0.646 0.649 0.660 0.646 0.604 0.609 0.641 0.599 0.667 0.669 0.643 0.648 0.668 0.669 0.644 0.668 0.671 0.672 0.628 0.628 0.673 0.654 0.639 0.639 0.694 0.701 0.688 0.628 0.695 0.646 0.639 0.629 0.694 0.701 0.688 0.629 0.653 0.654 0.629 0.629 0.654 0.704 0.638 0.629 0.651 0.651 0.601 0.601 0.651 0.652 0.661 0.661 0.651 0.652 0.653 0.653 0.652 0.653 0.653 0.653 0.603 0.	490	0.600	0.600	0.583	0.576	0.600
0.586 0.588 0.594 0.581 0.646 0.647 0.625 0.619 0.646 0.649 0.660 0.646 0.646 0.669 0.660 0.646 0.604 0.606 0.611 0.599 0.667 0.669 0.684 0.668 0.667 0.669 0.684 0.668 0.671 0.672 0.646 0.639 0.650 0.652 0.623 0.623 0.650 0.653 0.624 0.623 0.651 0.652 0.623 0.623 0.652 0.653 0.623 0.623 0.651 0.651 0.632 0.623 0.651 0.660 0.691 0.693 0.651 0.661 0.663 0.663 0.652 0.661 0.663 0.663 0.653 0.663 0.663 0.653 0.654 0.672 0.673 0.664 0.655 0.	495	0.623	0.625	0.632	0.620	0.637
0.646 0.647 0.625 0.619 0.646 0.649 0.660 0.646 0.646 0.669 0.640 0.646 0.667 0.669 0.647 0.648 0.668 0.669 0.644 0.668 0.668 0.669 0.644 0.648 0.671 0.672 0.632 0.639 0.694 0.694 0.701 0.638 0.695 0.652 0.639 0.639 0.623 0.624 0.639 0.651 0.651 0.629 0.651 0.651 0.601 0.651 0.651 0.601 0.651 0.660 0.651 0.652 0.651 0.601 0.653 0.660 0.653 0.654 0.654 0.653 0.655 0.660 0.653 0.601 0.603 0.603 0.603 0.604 0.608 0.604 0.608 0.654	200	0.586	0.588	0.594	0.581	0.599
0.646 0.649 0.660 0.646 0.604 0.606 0.611 0.599 0.667 0.669 0.647 0.640 0.668 0.669 0.647 0.648 0.668 0.669 0.645 0.668 0.671 0.672 0.663 0.612 0.694 0.694 0.701 0.688 0.623 0.646 0.629 0.629 0.650 0.653 0.646 0.624 0.718 0.716 0.704 0.624 0.651 0.652 0.654 0.624 0.651 0.660 0.691 0.671 0.651 0.660 0.651 0.651 0.652 0.661 0.651 0.653 0.617 0.617 0.653 0.653 0.617 0.617 0.608 0.653 0.708 0.704 0.654 0.653 0.708 0.707 0.608 0.659 0.609 0.	505	0.646	0.647	0.625	0.619	0.645
0.604 0.606 0.611 0.599 0.667 0.669 0.647 0.640 0.668 0.669 0.684 0.668 0.613 0.615 0.632 0.612 0.671 0.672 0.646 0.639 0.624 0.629 0.701 0.688 0.650 0.623 0.646 0.629 0.651 0.652 0.624 0.629 0.718 0.716 0.704 0.624 0.651 0.652 0.624 0.624 0.651 0.652 0.624 0.624 0.617 0.609 0.660 0.671 0.671 0.617 0.617 0.621 0.651 0.653 0.617 0.617 0.608 0.659 0.666 0.708 0.704 0.672 0.666 0.708 0.707 0.672 0.666 0.603 0.603 0.623 0.666 0.708 0.701 0.608 <t< td=""><td>510</td><td>0.646</td><td>0.649</td><td>099.0</td><td>0.646</td><td>0.663</td></t<>	510	0.646	0.649	099.0	0.646	0.663
0.667 0.669 0.647 0.640 0.668 0.689 0.684 0.668 0.613 0.615 0.632 0.612 0.671 0.672 0.646 0.639 0.694 0.701 0.688 0.650 0.653 0.624 0.651 0.652 0.624 0.718 0.716 0.704 0.692 0.617 0.660 0.691 0.671 0.617 0.617 0.607 0.607 0.617 0.621 0.653 0.653 0.622 0.621 0.653 0.653 0.617 0.609 0.653 0.653 0.617 0.617 0.607 0.653 0.617 0.621 0.653 0.653 0.708 0.704 0.654 0.666 0.708 0.707 0.706 0.706 0.603 0.603 0.628 0.628 0.603 0.603 0.658 0.658	515	0.604	0.606	0.611	0.599	0.617
0.668 0.669 0.684 0.668 0.613 0.615 0.625 0.612 0.671 0.672 0.639 0.639 0.694 0.694 0.701 0.688 0.623 0.651 0.646 0.629 0.650 0.651 0.632 0.624 0.718 0.716 0.691 0.692 0.661 0.660 0.691 0.671 0.617 0.617 0.621 0.673 0.690 0.689 0.660 0.653 0.701 0.702 0.653 0.653 0.602 0.603 0.663 0.653 0.617 0.601 0.607 0.603 0.702 0.703 0.653 0.659 0.703 0.704 0.672 0.666 0.603 0.603 0.649 0.628 0.603 0.603 0.628 0.628 0.603 0.603 0.658 0.658 0.603 0.	520	199.0	699.0	0.647	0.640	0.666
0.613 0.615 0.625 0.612 0.671 0.672 0.646 0.639 0.694 0.701 0.688 0.653 0.653 0.645 0.629 0.650 0.651 0.646 0.624 0.718 0.716 0.704 0.692 0.661 0.660 0.691 0.671 0.617 0.689 0.661 0.673 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.617 0.621 0.653 0.653 0.621 0.654 0.653 0.653 0.708 0.717 0.701 0.654 0.709 0.704 0.654 0.659 0.708 0.707 0.706 0.666 0.603 0.603 0.608 0.666 0.603 0.603 0.628 0.628 0.609 0.609 0.658 0.658 0.609 0.609 0.	525	0.668	0.669	0.684	899'0	0.686
0.671 0.672 0.646 0.639 0.694 0.701 0.688 0.623 0.623 0.646 0.629 0.650 0.651 0.624 0.624 0.718 0.716 0.704 0.692 0.661 0.660 0.691 0.671 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.617 0.621 0.634 0.634 0.617 0.617 0.653 0.634 0.617 0.617 0.608 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.706 0.706 0.613 0.612 0.628 0.628 0.603 0.603 0.658 0.628 0.603 0.603 0.658 0.658 0.609 0.609 0.666 0.658 0.609 0.609 0.608 0.628 0.609 0.609 0.	530	0.613	0.615	0.625	0.612	0.628
0.694 0.694 0.701 0.688 0.623 0.623 0.646 0.629 0.650 0.651 0.632 0.624 0.718 0.716 0.704 0.692 0.661 0.660 0.691 0.671 0.617 0.617 0.651 0.607 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.617 0.624 0.634 0.617 0.608 0.599 0.708 0.704 0.666 0.708 0.707 0.666 0.708 0.707 0.666 0.708 0.709 0.666 0.603 0.603 0.668 0.603 0.603 0.628 0.603 0.603 0.628 0.609 0.658 0.658 0.609 0.710 0.711	535	0.671	0.672	0.646	0.639	0.666
0.623 0.623 0.629 0.650 0.651 0.632 0.624 0.718 0.716 0.704 0.692 0.661 0.660 0.691 0.671 0.617 0.660 0.651 0.671 0.692 0.673 0.671 0.671 0.693 0.664 0.653 0.673 0.710 0.708 0.717 0.701 0.617 0.617 0.654 0.659 0.705 0.704 0.672 0.666 0.708 0.707 0.672 0.666 0.708 0.707 0.672 0.666 0.603 0.603 0.658 0.668 0.603 0.603 0.658 0.658 0.609 0.609 0.658 0.658 0.718 0.719 0.711	540	0.694	0.694	0.701	0.688	0.707
0.650 0.651 0.632 0.624 0.718 0.716 0.704 0.692 0.661 0.660 0.691 0.671 0.617 0.617 0.621 0.607 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.617 0.617 0.634 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.702 0.666 0.613 0.613 0.649 0.628 0.603 0.603 0.628 0.628 0.603 0.603 0.658 0.658 0.699 0.665 0.658 0.658 0.718 0.716 0.719 0.711	545	0.623	0.623	0.646	0.629	0.643
0.718 0.716 0.704 0.692 0.661 0.660 0.691 0.671 0.617 0.617 0.621 0.607 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.617 0.621 0.654 0.634 0.617 0.617 0.608 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.702 0.706 0.613 0.649 0.628 0.628 0.603 0.699 0.658 0.658 0.718 0.716 0.729 0.711	550	0.650	0.651	0.632	0.624	0.647
0.661 0.660 0.691 0.671 0.617 0.617 0.621 0.607 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.621 0.654 0.634 0.634 0.617 0.617 0.608 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.702 0.706 0.613 0.649 0.628 0.628 0.603 0.699 0.658 0.584 0.699 0.665 0.658 0.658 0.718 0.716 0.729 0.711	555	0.718	0.716	0.704	0.692	0.717
0.617 0.617 0.621 0.607 0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.622 0.621 0.654 0.634 0.617 0.617 0.698 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.702 0.706 0.613 0.649 0.628 0.699 0.699 0.658 0.699 0.665 0.658 0.718 0.716 0.729	260	0.661	099.0	0.691	0.671	0.685
0.690 0.689 0.660 0.653 0.710 0.708 0.717 0.701 0.622 0.621 0.654 0.634 0.617 0.617 0.608 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.722 0.706 0.613 0.649 0.628 0.603 0.603 0.584 0.699 0.665 0.658 0.718 0.716 0.729	595	0.617	0.617	0.621	0.607	0.625
0.710 0.708 0.717 0.701 0.622 0.621 0.654 0.634 0.617 0.617 0.608 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.722 0.706 0.613 0.649 0.628 0.603 0.699 0.658 0.699 0.665 0.658 0.718 0.716 0.729	270	0.690	0.689	099.0	0.653	0.681
0.622 0.621 0.654 0.634 0.617 0.617 0.608 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.702 0.706 0.613 0.613 0.649 0.628 0.603 0.699 0.699 0.658 0.718 0.716 0.729 0.711	575	0.710	0.708	0.717	0.701	0.722
0.617 0.617 0.617 0.599 0.705 0.704 0.672 0.666 0.708 0.707 0.722 0.706 0.613 0.613 0.649 0.628 0.603 0.699 0.658 0.658 0.718 0.716 0.729 0.711	580	0.622	0.621	0.654	0.634	0.647
0.705 0.704 0.672 0.666 0.708 0.707 0.722 0.706 0.613 0.613 0.649 0.628 0.603 0.699 0.658 0.658 0.718 0.716 0.729 0.711	585	0.617	0.617	0.608	0.599	0.620
0.708 0.707 0.722 0.706 0.613 0.613 0.649 0.628 0.603 0.603 0.595 0.584 0.699 0.665 0.658 0.718 0.716 0.729 0.711	290	0.705	0.704	0.672	0.666	0.696
0.613 0.613 0.649 0.628 0.603 0.603 0.595 0.584 0.699 0.665 0.658 0.718 0.716 0.729 0.711	595	0.708	0.707	0.722	0.706	0.725
0.603 0.603 0.595 0.584 0.699 0.669 0.665 0.658 0.718 0.716 0.729 0.711	009	0.613	0.613	0.649	0.628	0.641
0.699 0.665 0.658 0.718 0.716 0.729 0.711	605	0.603	0.603	0.595	0.584	0.607
0.718 0.716 0.729 0.711	610	0.699	0.699	0.665	0.658	0.684
	615	0.718	0.716	0.729	0.711	0.728

Rep. 2 (trans.) (1586 0.660 0.660 0.660 0.671 0.671 0.671 0.672 0.682 0.682 0.682 0.6834 0.682 0.6834 0.6834 0.6834 0.6834 0.6834 0.6834 0.6834 0.6834 0.6937	OPTRO	VICS MO	DEL 736 RADIO	OPTRONICS MODEL 736 RADIOMETER-TEXSTAR, INC.	AR,INC.	
Rep. 1 F (trans.) (tra				SAMPLE 3		
(trans.) (trans.) (trans.) (trans.) (trans.) (to 0.623		Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
0.623 0.587 0.660 0.733 0.667 0.572 0.581 0.672 0.626 0.715 0.626 0.638 0.638 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.699 0.690 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.690 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.680 0.680 0.680 0.680 0.680 0.680 0.680 0.690 0.		trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.587 0.660 0.733 0.672 0.572 0.572 0.678 0.678 0.626 0.547 0.631 0.631 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.630 0.	620	0.623	0.621	0.0660	0.637	0.644
0.660 0.733 0.667 0.572 0.572 0.678 0.678 0.625 0.625 0.631 0.538 0.631 0.538 0.638 0.638 0.638 0.638 0.638 0.638 0.638 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.677 0.526 0.526 0.526 0.526 0.688 0.	625	0.587	0.586	0.588	0.574	0.587
0.733 0.667 0.572 0.572 0.678 0.625 0.625 0.626 0.708 0.526 0.538 0.526 0.538 0.631 0.538 0.631 0.538 0.631 0.538 0.647 0.502 0.688 0.677 0.677 0.688 0.677 0.688 0.677 0.778 0.677 0.778 0.677 0.778 0.677 0.778 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.677 0.788 0.670 0.788 0.670 0.788 0.668 0.670 0.770 0.	630	099.0	099.0	0.625	0.618	0.643
0.667 0.572 0.581 0.678 0.625 0.625 0.626 0.708 0.631 0.538 0.639 0.639 0.639 0.638 0.647 0.556 0.668 0.668 0.668 0.668 0.668 0.668 0.668 0.668 0.668	635	0.733	0.729	0.716	0.703	0.726
0.572 0.581 0.678 0.715 0.625 0.656 0.708 0.631 0.631 0.638 0.638 0.668 0.668 0.668 0.668 0.668 0.668 0.668 0.677 0.577 0.577 0.577 0.577 0.577 0.688 0.699 0.699 0.699 0.699 0.699 0.699 0.699 0.690 0.600 0.	640	0.667	0.664	0.702	629.0	0.687
0.581 0.678 0.625 0.626 0.562 0.656 0.708 0.631 0.538 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.677 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.688 0.688 0.688 0.688 0.688 0.677 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.688	645	0.572	0.571	0.599	0.577	0.587
0.678 0.715 0.625 0.626 0.562 0.636 0.708 0.631 0.538 0.631 0.677 0.577 0.577 0.502 0.668 0.668 0.6478 0.650 0.650 0.650 0.650 0.650 0.650 0.650 0.650	650	0.581	0.579	0.563	0.553	0.572
0.715 0.625 0.547 0.562 0.656 0.631 0.538 0.638 0.639 0.688 0.688 0.677 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.526 0.526 0.688 0.688 0.688 0.677 0.777 0.777 0.777 0.777 0.777 0.777 0.778 0.688	655	0.678	0.674	0.640	0.634	0.662
0.625 0.547 0.562 0.656 0.708 0.631 0.538 0.638 0.639 0.688 0.677 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.588 0.688 0.688 0.688 0.688 0.688 0.677 0.577 0.577 0.500 0.500 0.680 0.880 0.	099	0.715	0.711	0.718	0.700	0.722
0.547 0.562 0.656 0.708 0.631 0.538 0.526 0.526 0.677 0.577 0.577 0.577 0.578 0.688 0.688 0.688 0.688 0.688 0.677 0.510 0.510 0.526 0.526 0.526 0.688 0.677 0.577 0.577 0.502 0.650 0.	999	0.625	0.621	0.668	0.643	0.655
0.562 0.656 0.708 0.631 0.538 0.688 0.677 0.577 0.577 0.577 0.502 0.688 0.668 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688	029	0.547	0.545	0.571	0.550	0.561
0.656 0.708 0.631 0.538 0.688 0.688 0.677 0.577 0.577 0.577 0.577 0.568 0.668 0.668 0.668 0.668 0.668 0.668 0.668	675	0.562	0.560	0.546	0.536	0.556
0.708 0.631 0.538 0.526 0.688 0.677 0.577 0.577 0.502 0.668 0.668 0.650 0.650 0.650 0.650 0.650 0.650 0.650	089	0.656	0.652	0.617	0.611	0.638
0.631 0.538 0.526 0.688 0.677 0.502 0.510 0.588 0.668 0.467 0.467 0.620 0.602	685	0.708	0.703	0.701	0.687	0.709
0.538 0.526 0.688 0.688 0.677 0.577 0.502 0.688 0.668 0.650 0.650 0.650 0.620 0.602	069	0.631	0.627	0.673	0.648	0.658
0.526 0.599 0.688 0.677 0.577 0.510 0.502 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688 0.688	695	0.538	0.534	0.572	0.549	0.558
0.599 0.688 0.577 0.577 0.502 0.688 0.688 0.688 0.650 0.478 0.467 0.620 0.602	700	0.526	0.522	0.521	0.509	0.525
0.688 0.677 0.577 0.502 0.510 0.688 0.688 0.688 0.688 0.650 0.478 0.467 0.620 0.602	705	0.599	0.594	0.563	0.557	0.583
0.677 0.502 0.502 0.510 0.688 0.688 0.680 0.650 0.478 0.478 0.602	710	0.688	0.681	0.654	0.646	0.671
0.577 0.502 0.510 0.588 0.688 0.680 0.478 0.478 0.478 0.478	715	0.677	0.670	0.693	0.673	0.687
0.502 0.510 0.588 0.668 0.650 0.478 0.467 0.620 0.602	720	0.577	0.573	0.622	0.596	0.603
0.510 0.588 0.668 0.650 0.478 0.467 0.620 0.602	725	0.502	0.497	0.527	0.507	0.515
0.588 0.668 0.650 0.556 0.467 0.620 0.602	730	0.510	0.506	0.499	0.490	0.505
0.668 0.650 0.556 0.478 0.467 0.620 0.602	735	0.588	0.583	0.549	0.547	0.570
0.650 0.556 0.478 0.467 0.620 0.662	740	0.668	099'0	0.635	0.629	0.653
0.556 0.478 0.467 0.525 0.620 0.602	745	0.650	0.643	0.665	0.648	0.662
0.478 0.467 0.525 0.620 0.602	750	0.556	0.551	0.598	0.575	0.581
0.467 0.525 0.620 0.662 0.602	755	0.478	0.474	0.508	0.488	0.495
0.525	092	0.467	0.462	0.468	0.455	0.468
0.620	765	0.525	0.519	0.496	0.492	0.511
0.662	770	0.620	0.613	0.579	0.575	0.601
0.602	775	0.662	0.654	0.652	0.640	0.660
0 \$07	780	0.602	0.596	0.635	0.613	0.622
1,000	785	0.507	0.501	0.549	0.526	0.531

	OPTRONICS MO	DEL 736 RAD	OPTRONICS MODEL 736 RADIOMETER-TEXSTAR, INC.	FAR,INC.	
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0 <i>6L</i>	0.448	0.445	0.472	0.454	0.460
56L	0.448	0.445	0.445	0.436	0.447
008	0.504	0.500	0.478	0.473	0.491
805	0.590	0.587	0.552	0.549	0.570
810	0.638	0.632	0.623	0.615	0.632
815	0.596	0.591	0.624	0.605	0.613
820	0.509	0.503	0.552	0.528	0.529
825	0.441	0.435	0.470	0.453	0.455
0£8	0.417	0.413	0.426	0.415	0.421
835	0.439	0.437	0.427	0.419	0.431
840	0.505	0.501	0.473	0.469	0.486
845	0.579	0.575	0.543	0.541	0.559
820	909:0	0.600	0.598	0.587	0.600
855	0.552	0.548	0.581	0.563	0.568
098	0.464	0.458	0.503	0.483	0.485
598	0.393	0.389	0.422	0.404	0.408
028	0.365	0.361	0.377	0.365	0.370
528	0.381	0.378	0.372	0.367	0.375
088	0.426	0.423	0.399	0.398	0.411
588	0.491	0.487	0.454	0.454	0.471
068	0.543	0.537	0.513	0.511	0.528
568	0.537	0.530	0.539	0.526	0.539
006	0.472	0.465	0.502	0.484	0.487
506	0.400	0.393	0.433	0.414	0.417
910	0.355	0.349	0.379	0.363	0.366
915	0.342	0.338	0.352	0.341	0.346
920	0.356	0.351	0.350	0.343	0.353
576	0.393	0.389	0.371	0.368	0.382
930	0.453	0.447	0.416	0.416	0.433
935	0.513	0.507	0.476	0.475	0.495
940	0.544	0.537	0.527	0.520	0.538
945	0.524	0.515	0.538	0.522	0.533
950	0.464	0.457	0.500	0.479	0.483

	UV/VIS/NIR SPECTROPHOTOMETER - SIERRACIN/SYLMAR CORP.	TROPHOTOR	METER - SIERRA	CIN/SYLMAR C	ORP.
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.474	0.472	0.472	0.473	0.473
455	0.490	0.497	0.497	0.495	0.495
460	0.459	0.459	0.459	0.460	0.460
465	0.545	0.548	0.548	0.547	0.547
470	0.472	0.477	0.477	0.476	0.475
475	0.551	0.549	0.549	0.551	0.551
480	0.543	0.551	0.551	0.549	0.548
485	0.517	0.517	0.518	0.518	0.519
490	0.619	0.621	0.621	0.621	0.621
495	0.553	0.560	0.560	0.559	0.559
200	0.574	0.572	0.573	0.573	0.573
505	0.652	0.656	0.656	0.655	0.655
510	0.572	0.578	0.578	0.576	0.577
515	865'0	0.596	0.597	0.597	0.598
520		0.684	0.684	0.683	0.683
525	0.591	0.598	0.598	0.596	0.596
530	009.0	0.599	0.599	0.599	0.600
535	669'0	0.701	0.701	0.701	0.700
540		0.627	0.628	0.626	0.626
545	0.587	0.587	0.588	0.588	0.589
550	0.693	0.690	0.690	0.691	0.691
555	0.677	0.686	0.686	0.684	0.684
260	0.580	0.585	0.585	0.584	0.584
565	0.630	0.625	0.626	0.626	0.627
570	0.721	0.723	0.723	0.722	0.722
575	0.627	0.636	0.637	0.633	0.634
580	0.569	0.569	0.570	0.569	0.570
585		0.653	0.654	0.656	0.656
590	0.722	0.727	0.727	0.727	0.727
595		0.619	0.620	0.616	0.618
009		0.559	0.561	0.560	0.561
605		0.644		0.645	0.646
610	0.728	0.732	0.732	0.731	0.731
615	0.626	0.636	0.637	0.633	0.634

1	JV/VIS/NIR SPEC	TROPHOTO	UV/VIS/NIR SPECTROPHOTOMETER - SIERRACIN/SYLMAR CORP	CIN/SYLMAR CO	ORP.
			SAMPLE 3		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	j	(trans.)	(trans.)
620	0.551	0.553	0.554	0.553	0.554
625	0.605	0.599		0.600	0.602
630	0.717	0.715	0.715	0.716	0.716
635	0.675	0.684		0.682	0.683
640	0.559	0.564	0.566	0.562	0.564
645	0.537	0.535	0.536	0.534	0.537
029	0.630	0.623	0.625	0.625	0.626
655	0.717	0.718		0.718	0.719
099	0.633	0.642	0.643	0.639	0.641
599	0.531	0.535	0.536	0.533	0.535
0.09	0.525	0.522	0.523	0.522	0.524
929	0.616	0.609		0.611	0.614
089	0.704	0.704	0.704	0.704	0.705
685	0.634	0.643		0.641	0.642
069	0.525	0.531		0.529	0.530
569	0.495	0.493		0.493	0.495
200	0.557	0.549	0.551	0.551	0.552
705	0.665	0.659	099'0	0.661	0.662
710	0.675	0.679		0.677	0.679
715	0.567	0.574		0.572	0.574
720	0.485	0.487	0.489	0.485	0.487
725	0.479	0.476		0.475	0.478
730	0.550	0.543	0.545	0.544	0.546
735	0.649	0.644	0.644	0.644	0.646
740	0.649	0.653		0.651	0.653
745	0.544	0.551	0.553	0.548	0.550
750	0.460	0.462	0.464	0.460	0.463
755	0.441	0.438		0.438	0.441
092	0.492	0.487		0.488	0.490
765	0.593	0.585	0.587	0.587	0.589
770	0.652	0.651		0.651	0.653
775	0.592	0.599		0.597	0.599
780	0.490	0.496		0.493	0.495
785	0.429	0.429	0.431	0.429	0.431

		UV/VIS/NIR SPE	CTROPHOTO	METER - SIERR	UV/VIS/NIR SPECTROPHOTOMETER - SIERRACIN/SYLMAR CORP.	CORP.
				SAMPLE 3		
	wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
	(mu)	(trans.)	(trans.)		(trans.)	(trans.)
	062	0.424	0.422		0.421	0.424
	262	0.477	0.470		0.472	0.474
	800	0.568	0.560		0.561	0.563
	805	0.627	0.624	9790	0.623	0.625
	810	0.583	0.588	165.0	0.586	0.588
	815	0.488	0.494		0.492	0.494
	820	0.418	0.421		0.418	0.421
	825	0.394	0.393		0.394	0.395
	088	0.418	0.414		0.413	0.416
	588	0.484	0.476		0.477	0.479
	840	0.565	0.558	0.561	0.559	0.560
	845	0.597	0.595		0.595	0.596
	820	0.541	0.550		0.544	0.547
·	558	0.451	0.661		0.457	0.458
	098	0.385	0.386		0.384	0.386
	865	0.347	0.353		0.347	0.348
	870	0.353	0.356		0.355	0.355
	875	0.394	0.396	0.397	0.347	0.400
	880	0.465	0.467	0.470	0.468	0.468
	885	0.530	0.527	0.530	0.526	0.526
	890	0.524	0.528	0.531	0.524	0.524
	895	0.461	0.471	0.471	0.463	0.462
	006	0.387	0.395	0.392	0.386	0.389
	506	0.334	0.343	0.343	0.336	0.336
	910	0.317	0.317		0.318	0.317
	915		0.329		0.332	0.332
	920		0.370	0.373	0.371	0.370
	925	0.429	0.427	0.430	0.429	0.429
	930		0.489	0.490	0.495	0.493
	935		0.531	0.532	0.526	0.526
	940	0.503	0.511	0.510	0.501	0.502
	945	0.436	0.443	0.442	0.439	0.440
	950	0.382	0.384	0.384	0.378	0.380

	Rep. 2 (trans.) (trans.) (trans.) (0.838	Rep. 3 (trans.) (trans.) (1847 0.847 0.849 0.849 0.841 0.841 0.842 0.842 0.842 0.842	Rep. 4 (trans.) 0.852 0.852 0.849 0.854 0.854 0.854 0.854 0.854 0.854 0.851 0.851 0.851 0.851 0.851 0.855 0.851 0.	Rep. 5 (trans.) 0.826 0.824 0.826 0.826 0.827 0.833 0.833 0.833 0.833
	(trans.) (1838 0.838 0.845 0.845 0.847 0.847 0.838 0.838 0.838 0.838 0.838 0.838	Rep. 3 (trans.) 0.847 0.849 0.846 0.841 0.842 0.842 0.843 0.843 0.843 0.844 0.842	Rep. 4 (trans.) 0.852 0.842 0.849 0.854 0.854 0.854 0.854 0.854 0.851 0.851 0.851 0.855 0.	(trans.) (trans.) 0.826 0.824 0.826 0.826 0.826 0.827 0.829 0.833 0.833 0.833
	(trans.) 0.838 0.838 0.845 0.845 0.847 0.847 0.838 0.838 0.838 0.838 0.838 0.838	(trans.) 0.847 0.844 0.849 0.841 0.842 0.842 0.843 0.843 0.842 0.843 0.844 0.844	(trans.) 0.852 0.842 0.849 0.854 0.846 0.851 0.851 0.851 0.851 0.851 0.851 0.851 0.851 0.851	(trans.) 0.826 0.828 0.828 0.826 0.835 0.827 0.830 0.833 0.833 0.833 0.833 0.833
	0.838 0.836 0.843 0.840 0.847 0.847 0.838 0.838 0.838 0.838 0.838	0.847 0.847 0.847 0.849 0.841 0.842 0.842 0.843 0.843 0.843	0.852 0.849 0.849 0.854 0.854 0.848 0.851 0.846 0.847 0.847 0.847 0.847 0.847 0.847 0.847 0.847	0.824 0.828 0.828 0.835 0.827 0.830 0.833 0.833 0.833
	0.836 0.843 0.843 0.847 0.838 0.838 0.838 0.838 0.838 0.838	0.844 0.849 0.849 0.841 0.841 0.842 0.843 0.843 0.843	0.842 0.849 0.856 0.854 0.848 0.851 0.847 0.847 0.847 0.847 0.847 0.847	0.824 0.828 0.840 0.827 0.827 0.830 0.833 0.833 0.833
	0.838 0.845 0.845 0.839 0.838 0.838 0.838 0.838 0.838 0.838	0.847 0.849 0.841 0.841 0.842 0.842 0.843 0.843 0.843	0.849 0.856 0.854 0.846 0.851 0.851 0.847 0.847 0.847 0.847 0.847	0.828 0.840 0.827 0.827 0.830 0.833 0.833 0.833
	0.843 0.845 0.840 0.839 0.838 0.838 0.838 0.838 0.838 0.838	0.849 0.841 0.841 0.842 0.845 0.845 0.842 0.843 0.844	0.856 0.854 0.846 0.854 0.851 0.851 0.847 0.855 0.850	0.840 0.826 0.837 0.826 0.830 0.832 0.833 0.837
	0.845 0.839 0.847 0.847 0.838 0.838 0.838 0.838 0.838	0.846 0.841 0.841 0.842 0.842 0.842 0.843 0.843	0.854 0.846 0.848 0.851 0.851 0.847 0.855 0.855 0.847	0.825 0.835 0.827 0.829 0.830 0.832 0.832 0.832
	0.840 0.839 0.847 0.838 0.838 0.838 0.838 0.838	0.841 0.841 0.842 0.842 0.843 0.843 0.843	0.846 0.848 0.851 0.851 0.847 0.855 0.847 0.855	0.835 0.826 0.829 0.830 0.832 0.833 0.833
	0.839 0.847 0.838 0.838 0.838 0.840 0.837 0.838	0.844 0.842 0.842 0.843 0.843 0.841 0.841	0.848 0.854 0.851 0.847 0.847 0.855 0.847 0.847	0.825 0.829 0.829 0.830 0.833 0.833 0.827
	0.847 0.847 0.838 0.838 0.840 0.837 0.838	0.842 0.845 0.845 0.845 0.843 0.841 0.842	0.854 0.851 0.846 0.847 0.855 0.847 0.850	0.826 0.830 0.830 0.833 0.833 0.827
	0.847 0.838 0.838 0.838 0.840 0.837	0.845 0.845 0.842 0.841 0.842 0.844	0.851 0.846 0.847 0.855 0.850 0.850	0.829 0.830 0.832 0.833 0.827
	0.838 0.838 0.838 0.840 0.837 0.838	0.842 0.842 0.843 0.841 0.844	0.846 0.847 0.855 0.847 0.850 0.841	0.830 0.832 0.833 0.827 0.829
	0.838 0.840 0.837 0.837	0.843 0.843 0.841 0.842 0.844	0.847 0.855 0.847 0.850 0.841	0.832 0.833 0.827
	0.838 0.840 0.837 0.838	0.843 0.841 0.842 0.844	0.855 0.847 0.850 0.841	0.833 0.827 0.829
	0.840 0.837 0.838	0.842	0.847 0.850 0.841	0.827
	0.837	0.842	0.850	0.829
	0.838	0.844	0.841	
		0000		0.835
	0.840	0.838	0.847	0.839
	0.835	0.842	0.844	0.831
	0.833	0.839	0.841	0.831
	0.835	0.836	0.838	0.828
	0.828	0.834	0.842	0.827
	0.831	0.832	0.837	0.816
	0.832	0.832	0.842	0.818
	0.828	0.830	0.836	0.827
	0.828	0.833	0.841	0.822
	0.830	0.832	0.836	0.822
	0.825	0.834	0.835	0.816
	0.824	0.830	0.835	0.822
	0.830	0.828	0.838	0.819
	0.831	0.829	0.835	0.826
678.0	0.832	0.832	0.839	0.823
600 0.830	0.833	0.833	0.840	0.824
605 0.832	0.835	0.836	0.840	0.830
610 0.836	0.838	0.839	0.847	0.835
	0.841	0.841	0.849	0.831

	EG&G RADOM	A SPECTRARA	DIOMETER - A	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	(HECV)
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.839	0.838	0.843	0.849	0.838
625	0.838	0.840	0.844	0.849	0.834
930	0.841	0.843		0.849	0.835
635	0.842	0.844	0.845	0.852	0.830
640	0.845	0.847	0.849	0.856	0.838
645	0.849	0.854	0.853	0.857	0.842
929	0.852	0.856	0.859	0.863	0.843
655	158.0	0.859	098.0	198.0	0.847
099	0.862	0.862	0.862	0.871	0.856
999		0.870	0.871	0.877	0.859
029	698'0	0.872	0.870	0.874	0.856
675	978.0	0.868	0.873	0.880	0.865
089	028'0	0.874	0.877	628.0	0.864
685	<i>LL</i> 8:0	698'0	0.875	628.0	0.862
069	628.0	0.879	0.883	0.885	0.868
695	0.880	0.875	0.877	0.887	0.867
700	0.877	0.879	0.882	0.884	0.875
705		0.882	0.882	0.888	0.875
710		0.880	0.881	0.888	0.877
715	0.879	0.883	0.883	0.891	0.883
720	0.882	0.880	0.882	0.891	0.882
725	0.881	0.878	0.881	0.892	0.875
730		0.883	0.885	0.892	0.879
735		0.882	0.883	0.891	0.875
740		0.883	0.884	0.889	0.878
745		0.885	0.885	0.895	0.879
750	0.884	0.883	0.887	0.889	0.885
755	0.885	0.886		0.888	0.883
160	0.885	0.884		0.891	0.878
765					0.885
770		0.887			0.894
775		0.881			0.894
780					0.889
785	0.885	0.885	0.889	0.897	0.891

wavelength Rep. 1 Rep. 2 Rep. 3 Rep. 4 Rep. 5 (nm) (trans.) (trans.) (trans.) (trans.) (trans.) 700 (trans.) (trans.) (trans.) (trans.) (trans.) 800 (trans.) (trans.) (trans.) (trans.) (trans.) <t< th=""><th>H</th><th>GG&G RADOMA</th><th>SPECTRARA</th><th>DIOMETER - AF</th><th>EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)</th><th>(HECV)</th></t<>	H	GG&G RADOMA	SPECTRARA	DIOMETER - AF	EG&G RADOMA SPECTRARADIOMETER - ARMSTRONG LAB (HECV)	(HECV)
Rep. 1 Rep. 2 Rep. 3 Rep. 4 I (trans.)			1.00	SAMPLE 4		
(trans.)	wavelength	Rep. 1	Rep. 2		Rep. 4	Rep. 5
0.890 0.887 0.890 0.895 0.886 0.887 0.892 0.891 0.886 0.883 0.892 0.891 0.888 0.883 0.891 0.893 0.892 0.883 0.891 0.893 0.893 0.888 0.889 0.899 0.886 0.886 0.885 0.896 0.887 0.888 0.886 0.899 0.887 0.889 0.890 0.896 0.887 0.889 0.886 0.886 0.887 0.887 0.889 0.887 0.887 0.887 0.886 0.887 0.887 0.887 0.889 0.882 0.888 0.888 0.888 0.889 0.888 0.888 0.889 0.892 0.884 0.889 0.889 0.892 0.884 0.889 0.891 0.892 0.884 0.887 0.892 0.892 0.887 0.	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.886 0.887 0.891 0.891 0.886 0.887 0.892 0.892 0.887 0.889 0.893 0.892 0.887 0.889 0.891 0.893 0.891 0.889 0.893 0.894 0.892 0.888 0.889 0.894 0.893 0.886 0.893 0.893 0.886 0.889 0.889 0.892 0.887 0.887 0.889 0.892 0.887 0.887 0.889 0.892 0.887 0.887 0.889 0.892 0.887 0.887 0.889 0.892 0.887 0.887 0.889 0.892 0.888 0.887 0.883 0.892 0.888 0.889 0.889 0.894 0.876 0.887 0.897 0.892 0.877 0.887 0.897 0.892 0.892 0.893 0.894 0.894 0.892 0.	06L	0.890	0.887	0.890	0.895	0.882
0.886 0.886 0.887 0.892 0.883 0.893 0.893 0.893 0.893 0.883 0.893 0.893 0.893 0.883 0.894 0.893 0.891 0.893 0.893 0.894 0.891 0.893 0.894 0.894 0.891 0.893 0.894 0.896 0.882 0.885 0.896 0.896 0.883 0.884 0.883 0.893 0.885 0.884 0.883 0.885 0.885 0.884 0.883 0.886 0.885 0.884 0.883 0.885 0.887 0.883 0.885 0.885 0.887 0.883 0.885 0.886 0.884 0.883 0.884 0.886 0.884 0.884 0.884 0.881 0.888 0.887 0.894 0.894 0.899 0.893 0.894 0.895 0.899 0.	262	0.886	0.888	0.892	0.891	0.881
0.888 0.890 0.886 0.892 0.892 0.883 0.891 0.893 0.893 0.888 0.891 0.893 0.897 0.888 0.891 0.893 0.897 0.885 0.896 0.896 0.888 0.886 0.896 0.896 0.888 0.888 0.892 0.892 0.889 0.884 0.889 0.902 0.887 0.887 0.886 0.886 0.887 0.887 0.886 0.886 0.887 0.887 0.886 0.886 0.884 0.887 0.887 0.886 0.884 0.887 0.889 0.896 0.884 0.889 0.889 0.896 0.878 0.889 0.889 0.896 0.878 0.889 0.881 0.896 0.876 0.887 0.896 0.896 0.888 0.889 0.886 0.896 0.888 0.	008	0.886	0.886	0.887	968.0	0.894
0.892 0.883 0.891 0.893 0.893 0.891 0.898 0.897 0.885 0.891 0.894 0.891 0.885 0.899 0.895 0.899 0.891 0.886 0.899 0.899 0.899 0.888 0.886 0.889 0.890 0.890 0.887 0.887 0.889 0.900 0.889 0.887 0.887 0.889 0.886 0.886 0.887 0.887 0.889 0.886 0.886 0.887 0.887 0.889 0.886 0.886 0.884 0.883 0.883 0.890 0.890 0.884 0.884 0.884 0.891 0.891 0.878 0.889 0.881 0.891 0.892 0.878 0.884 0.891 0.892 0.892 0.886 0.887 0.892 0.892 0.892 0.888 0.889 0.892 0.892 0.892	802	0.888	0.890	0.886	0.892	0.886
0.893 0.888 0.891 0.898 0.897 0.893 0.886 0.894 0.891 0.893 0.886 0.899 0.886 0.886 0.896 0.890 0.888 0.888 0.889 0.892 0.889 0.884 0.889 0.900 0.885 0.887 0.889 0.889 0.877 0.878 0.889 0.885 0.881 0.887 0.889 0.885 0.883 0.887 0.889 0.889 0.884 0.887 0.889 0.889 0.884 0.887 0.889 0.880 0.884 0.887 0.889 0.880 0.878 0.887 0.881 0.881 0.878 0.887 0.887 0.895 0.889 0.887 0.895 0.895 0.895 0.895 0.895 0.895 0.895 0.895 0.895 0.895 0.895 0.	810	0.892	0.883	0.891	0.893	0.900
0.897 0.893 0.886 0.894 0.891 0.885 0.885 0.896 0.886 0.886 0.889 0.890 0.8887 0.884 0.884 0.892 0.887 0.884 0.889 0.900 0.885 0.884 0.889 0.889 0.887 0.887 0.885 0.887 0.887 0.887 0.885 0.885 0.887 0.887 0.889 0.887 0.884 0.887 0.889 0.880 0.884 0.887 0.889 0.880 0.884 0.887 0.889 0.880 0.878 0.887 0.881 0.881 0.878 0.887 0.887 0.889 0.888 0.887 0.896 0.896 0.895 0.897 0.897 0.891 0.895 0.897 0.899 0.891 0.895 0.892 0.892 0.892 0.892 0	815	0.893	0.888	0.891	0.898	0.896
0.891 0.885 0.885 0.896 0.886 0.886 0.890 0.896 0.888 0.884 0.892 0.892 0.887 0.884 0.892 0.900 0.889 0.884 0.892 0.900 0.885 0.884 0.889 0.889 0.877 0.874 0.883 0.886 0.887 0.887 0.887 0.887 0.887 0.887 0.887 0.887 0.887 0.887 0.887 0.897 0.887 0.889 0.897 0.897 0.884 0.887 0.897 0.897 0.887 0.889 0.897 0.897 0.879 0.889 0.897 0.896 0.879 0.881 0.897 0.896 0.889 0.889 0.895 0.895 0.899 0.899 0.895 0.896	820	0.897	0.893	0.886	0.894	0.895
0.886 0.886 0.890 0.896 0.888 0.886 0.887 0.892 0.887 0.884 0.892 0.892 0.889 0.889 0.900 0.885 0.884 0.889 0.889 0.885 0.887 0.889 0.886 0.877 0.878 0.883 0.886 0.887 0.887 0.887 0.887 0.887 0.887 0.887 0.897 0.887 0.889 0.893 0.896 0.884 0.887 0.897 0.897 0.884 0.887 0.897 0.897 0.879 0.889 0.897 0.897 0.879 0.887 0.897 0.896 0.879 0.887 0.897 0.896 0.889 0.887 0.895 0.895 0.899 0.899 0.895 0.895	828	0.891	0.885	0.885	0.899	868.0
0.886 0.885 0.890 0.887 0.893 0.884 0.892 0.889 0.884 0.899 0.900 0.885 0.884 0.891 0.892 0.885 0.884 0.889 0.902 0.879 0.885 0.889 0.889 0.877 0.878 0.885 0.885 0.887 0.887 0.885 0.892 0.884 0.883 0.895 0.896 0.884 0.883 0.896 0.896 0.878 0.889 0.891 0.892 0.879 0.881 0.882 0.892 0.879 0.881 0.882 0.892 0.871 0.882 0.892 0.892 0.871 0.882 0.892 0.892 0.882 0.887 0.892 0.892 0.892 0.892 0.892 0.892 0.892 0.893 0.893 0.907 0.894 0.893 0.	830	0.886	9880	0.890	968.0	0.903
0.887 0.893 0.884 0.892 0.889 0.884 0.889 0.900 0.885 0.884 0.891 0.892 0.879 0.887 0.889 0.889 0.877 0.874 0.883 0.886 0.875 0.874 0.887 0.887 0.887 0.889 0.889 0.893 0.884 0.889 0.893 0.893 0.884 0.889 0.899 0.890 0.878 0.889 0.890 0.891 0.878 0.889 0.891 0.891 0.878 0.889 0.891 0.892 0.879 0.889 0.881 0.892 0.886 0.887 0.892 0.893 0.888 0.887 0.894 0.894 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.899 0.	835	0.888	9880	0.885	0.890	0.900
0.889 0.884 0.889 0.900 0.885 0.884 0.891 0.892 0.879 0.885 0.889 0.889 0.885 0.878 0.885 0.886 0.875 0.878 0.885 0.885 0.887 0.889 0.889 0.892 0.886 0.889 0.889 0.896 0.884 0.889 0.889 0.896 0.884 0.889 0.890 0.891 0.878 0.889 0.891 0.891 0.878 0.889 0.891 0.892 0.876 0.889 0.889 0.892 0.876 0.887 0.892 0.893 0.888 0.887 0.896 0.896 0.889 0.897 0.896 0.894 0.899 0.899 0.899 0.899 0.892 0.899 0.899 0.899 0.892 0.899 0.899 0.899 0.892 0.	840	0.887	0.893	0.884	0.892	0.906
0.885 0.884 0.891 0.892 0.879 0.885 0.889 0.889 0.874 0.883 0.886 0.887 0.875 0.874 0.885 0.877 0.875 0.878 0.885 0.895 0.886 0.887 0.899 0.896 0.884 0.883 0.886 0.896 0.879 0.889 0.881 0.896 0.878 0.887 0.897 0.896 0.877 0.881 0.897 0.892 0.878 0.887 0.897 0.899 0.886 0.887 0.896 0.896 0.888 0.887 0.896 0.896 0.899 0.897 0.896 0.896 0.899 0.899 0.899 0.896 0.899 0.899 0.899 0.896 0.899 0.899 0.899 0.896 0.899 0.899 0.899 0.899 0.899 0.	845	0.889	0.884	0.889	0.900	0.894
0.879 0.885 0.889 0.889 0.885 0.874 0.883 0.886 0.877 0.878 0.887 0.887 0.883 0.887 0.883 0.893 0.884 0.883 0.896 0.896 0.884 0.887 0.889 0.889 0.878 0.880 0.877 0.880 0.878 0.880 0.877 0.891 0.878 0.880 0.877 0.892 0.878 0.887 0.892 0.893 0.886 0.877 0.893 0.893 0.871 0.881 0.892 0.893 0.887 0.887 0.893 0.893 0.888 0.887 0.896 0.896 0.899 0.897 0.896 0.896 0.892 0.893 0.896 0.896 0.892 0.893 0.896 0.896 0.893 0.893 0.896 0.896 0.894 0.	820	0.885	0.884	0.891	0.892	0.885
0.885 0.874 0.885 0.887 0.877 0.874 0.885 0.877 0.875 0.878 0.885 0.885 0.883 0.889 0.889 0.893 0.884 0.887 0.889 0.889 0.878 0.889 0.889 0.894 0.878 0.880 0.877 0.880 0.878 0.880 0.877 0.893 0.878 0.880 0.877 0.893 0.878 0.887 0.892 0.892 0.886 0.877 0.893 0.893 0.877 0.881 0.892 0.893 0.889 0.887 0.892 0.893 0.899 0.894 0.894 0.894 0.894 0.892 0.893 0.894 0.894 0.896 0.870 0.893 0.895 0.896 0.896 0.870 0.893 0.896 0.896 0.896 0.894 0.895 <t< td=""><td>855</td><td>0.879</td><td>0.885</td><td>0.880</td><td>0.889</td><td>0.888</td></t<>	855	0.879	0.885	0.880	0.889	0.888
0.877 0.878 0.875 0.875 0.883 0.889 0.885 0.885 0.884 0.889 0.893 0.893 0.884 0.889 0.896 0.896 0.884 0.887 0.889 0.896 0.879 0.880 0.877 0.880 0.878 0.880 0.876 0.891 0.878 0.880 0.877 0.892 0.878 0.887 0.897 0.892 0.886 0.887 0.895 0.895 0.889 0.887 0.896 0.894 0.899 0.897 0.896 0.896 0.892 0.897 0.896 0.896 0.892 0.897 0.896 0.896 0.892 0.893 0.896 0.896 0.892 0.893 0.896 0.896 0.893 0.893 0.896 0.896 0.894 0.893 0.896 0.896 0.894 0.	098	0.885	0.879	0.883	0.886	0.888
0.875 0.878 0.878 0.885 0.885 0.886 0.887 0.889 0.893 0.892 0.886 0.887 0.889 0.892 0.892 0.884 0.883 0.886 0.886 0.886 0.879 0.880 0.877 0.880 0.891 0.878 0.880 0.877 0.893 0.892 0.878 0.880 0.877 0.893 0.892 0.879 0.881 0.877 0.893 0.892 0.886 0.887 0.895 0.895 0.895 0.899 0.894 0.896 0.896 0.896 0.870 0.897 0.896 0.896 0.896 0.871 0.897 0.896 0.896 0.896 0.872 0.897 0.896 0.896 0.896 0.873 0.897 0.896 0.896 0.896 0.874 0.897 0.896 0.896 0.896 0.896	865	0.877	0.874	0.885	0.877	0.870
0.883 0.883 0.902 0.886 0.887 0.889 0.893 0.881 0.885 0.890 0.892 0.884 0.883 0.889 0.880 0.879 0.884 0.877 0.881 0.878 0.884 0.877 0.892 0.878 0.884 0.877 0.892 0.877 0.880 0.887 0.895 0.886 0.887 0.895 0.895 0.889 0.887 0.896 0.896 0.899 0.899 0.896 0.896 0.870 0.897 0.896 0.896 0.870 0.897 0.896 0.896 0.870 0.897 0.896 0.896 0.871 0.897 0.896 0.896 0.872 0.897 0.896 0.896	870	0.875	0.878	0.878	0.885	0.879
0.886 0.887 0.889 0.893 0.881 0.885 0.890 0.892 0.884 0.883 0.886 0.886 0.884 0.877 0.880 0.894 0.878 0.887 0.881 0.891 0.878 0.884 0.877 0.892 0.877 0.880 0.897 0.892 0.886 0.877 0.892 0.892 0.887 0.897 0.894 0.894 0.899 0.897 0.896 0.891 0.892 0.897 0.896 0.896 0.892 0.897 0.896 0.896 0.892 0.893 0.896 0.896 0.893 0.895 0.896 0.896 0.894 0.899 0.899 0.896 0.895 0.899 0.896 0.896	875	0.883	0.889	0.883	0.902	0.878
0.881 0.885 0.890 0.892 0.884 0.883 0.880 0.884 0.877 0.880 0.879 0.880 0.877 0.878 0.881 0.894 0.878 0.887 0.892 0.877 0.882 0.892 0.886 0.887 0.892 0.888 0.887 0.894 0.892 0.894 0.896 0.892 0.897 0.896 0.892 0.893 0.896 0.894 0.897 0.896 0.897 0.896 0.896 0.897 0.896 0.896 0.897 0.897 0.896 0.897 0.899 0.896	880	0.886	0.887	0.889	0.893	0.882
0.884 0.889 0.883 0.896 0.884 0.877 0.880 0.877 0.880 0.879 0.880 0.877 0.881 0.881 0.878 0.884 0.877 0.892 0.892 0.877 0.889 0.892 0.899 0.899 0.886 0.876 0.896 0.894 0.894 0.899 0.894 0.879 0.896 0.896 0.870 0.897 0.896 0.896 0.896 0.871 0.897 0.896 0.896 0.896 0.872 0.897 0.896 0.896 0.896 0.873 0.897 0.896 0.896 0.896 0.874 0.897 0.897 0.896 0.896 0.875 0.897 0.897 0.896 0.896	882	0.881	0.885	0.890	0.892	0.875
0.884 0.877 0.880 0.879 0.880 0.876 0.894 0.878 0.880 0.877 0.881 0.877 0.882 0.892 0.886 0.877 0.899 0.888 0.876 0.895 0.899 0.897 0.894 0.892 0.894 0.887 0.892 0.893 0.896 0.870 0.897 0.896 0.871 0.897 0.896 0.872 0.897 0.896	068	0.884	0.889	0.883	968.0	0.882
0.879 0.880 0.876 0.894 0.878 0.880 0.867 0.881 0.878 0.884 0.877 0.892 0.877 0.889 0.897 0.899 0.888 0.887 0.894 0.894 0.892 0.894 0.887 0.896 0.870 0.895 0.897 0.896 0.870 0.903 0.897 0.896 0.871 0.897 0.896 0.896 0.872 0.897 0.896 0.896	895	0.884	0.884	0.877	0.880	0.878
0.878 0.880 0.867 0.881 0.878 0.884 0.877 0.892 0.877 0.880 0.887 0.899 0.888 0.887 0.894 0.894 0.892 0.894 0.879 0.881 0.892 0.895 0.887 0.896 0.870 0.903 0.907 0.907 0.875 0.895 0.895 0.895 0.876 0.895 0.896 0.896 0.894 0.895 0.896 0.896	006	0.879	0.880	0.876	0.894	0.871
0.878 0.884 0.877 0.892 0.877 0.880 0.887 0.899 0.886 0.876 0.882 0.895 0.888 0.887 0.894 0.894 0.892 0.893 0.881 0.892 0.895 0.896 0.870 0.903 0.893 0.907 0.875 0.895 0.895 0.895 0.894 0.895 0.895 0.895	905	0.878	0.880	0.867	0.881	0.863
0.877 0.880 0.887 0.899 0.886 0.876 0.882 0.895 0.888 0.887 0.894 0.894 0.892 0.893 0.881 0.892 0.895 0.887 0.896 0.870 0.903 0.893 0.907 0.875 0.895 0.895 0.895 0.894 0.895 0.895 0.896	910	0.878	0.884	0.877	0.892	0.865
0.886 0.876 0.882 0.895 0.888 0.887 0.896 0.894 0.892 0.894 0.879 0.881 0.892 0.895 0.887 0.896 0.870 0.903 0.896 0.896 0.875 0.895 0.895 0.895 0.894 0.899 0.896 0.896	915	0.877	0.880	0.887	0.899	0.883
0.888 0.887 0.896 0.894 0.899 0.894 0.879 0.881 0.892 0.895 0.887 0.896 0.870 0.903 0.893 0.907 0.875 0.895 0.895 0.895 0.894 0.896 0.896 0.896	920	0.886	0.876	0.882	0.895	0.872
0.899 0.894 0.879 0.881 0.892 0.895 0.887 0.896 0.870 0.903 0.893 0.907 0.875 0.895 0.895 0.895 0.894 0.896 0.896 0.896	925	0.888	0.887	968.0	0.894	0.882
0.892 0.895 0.887 0.896 0.870 0.903 0.893 0.907 0.875 0.895 0.895 0.895 0.894 0.890 0.896 0.896	930	0.899	0.894	0.879	0.881	0.890
0.870 0.903 0.893 0.907 0.875 0.895 0.895 0.895 0.894 0.890 0.892 0.896	935	0.892	0.895	0.887	968.0	0.868
0.875 0.895 0.899 0.895 0.894 0.890 0.882 0.896	940	0.870	0.903	0.893	0.907	0.898
0.894 0.890 0.882 0.896	945	0.875	0.895	0.899	0.895	0.894
The second secon	056	0.894	068'0	0.882	968.0	0.845

	۲	ARY 5G SPECT	RAPHOTOM	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	, AFB (AL/OEO)	
				SAMPLE 4		
wavelength	ıgth	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
T)	(nm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
7	450	0.823	0.824	0.821	0.819	0.817
7	455	0.823	0.827	0.824	0.822	0.821
7	460	0.827	0.829	0.826	0.823	0.823
,	465	0.829	0.830	0.829	0.825	0.825
7	470	0.829	0.832	0.829	0.827	0.826
7	475	0.831	0.833	0.831	0.829	0.828
7	480	0.832	0.834	0.833	0.830	0.829
,	485	0.833	0.835	0.833	0.830	0.830
7	490	0.833	0.835	0.833	0.831	0.830
,	495	0.834	0.835	0.834	0.831	0.831
	200	0.834	0.836	0.833	0.831	0.830
	505	0.833	0.836	0.833	0.832	0.830
	510	0.834	0.835	0.833	0.832	0.830
,	515	0.833	0.835	0.834	0.832	0.830
	520	0.832	0.835		0.831	0.830
	525	0.832	0.833	0.832	0.830	0.829
	530	0.830	0.832	0.831	0.829	0.828
	535	0.829	0.831		0.828	0.827
	540	0.829	0.830	0.828	0.826	0.825
	545	0.827	0.830		0.825	0.824
	550	0.827	0.828	0.826	0.825	0.823
	555	0.826	0.828		0.824	0.824
	260	0.825	0.829		0.825	0.823
	565	0.826	0.828		0.823	0.822
	270	0.824	0.826		0.822	0.821
	575	0.823	0.824		0.821	0.820
	580	0.823	0.823	0.821	0.820	0.819
	585	0.822	0.824	0.823	0.819	0.820
	590	0.823	0.825	0.824	0.822	0.821
	595	0.826	0.828	3 0.825	0.824	0.823
	009	0.829	0.831		0.827	0.827
	605	0.832	0.834	0.832	0.830	0.825
	610	0.835	0.836	5 0.834	0.832	0.832
	615	0.836	0.837	0.836	0.835	0.833

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			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.837	0.839	0.837	0.835	0.835
625	0.837	0.839	0.837	0.836	0.835
630	0.839	0.840	0.838	0.836	0.836
635	0.841	0.842	0.839	0.838	0.838
640	0.844	0.845	0.844	0.842	0.841
645	0.848	0.851	0.849	0.847	0.845
620	0.854	0.856	0.854	0.852	0.852
655	0.859	0.861	0.859	0.858	0.857
099	0.864	0.867	0.864	0.862	0.862
999	0.868	698.0	698.0	998.0	0.866
029	0.871	0.872	0.870	0.870	0.868
675	0.874	0.874	0.874	0.872	0.872
089	0.876	0.877	0.875	0.875	0.873
685	0.878	0.879	0.878	0.877	0.876
069	0.879	0.881	0.880	0.878	0.876
695	0.880	0.883	0.881	0.879	0.879
200	0.881	0.883	0.882	0.880	0.880
705	0.882	0.884	0.881	0.881	0.880
710	0.882	0.885	0.882	0.880	0.880
715	0.883	0.885	0.883	0.882	0.882
720	0.883	0.885	0.885	0.883	0.882
725	0.884	0.887	0.885	0.883	0.883
730	0.884	0.886	0.885	0.883	0.884
735	0.884	9880	0.885	0.884	0.881
740	0.884	0.886	0.884	0.883	0.882
745	0.884	0.887	0.884	0.883	0.883
750	0.886	0.887	0.885	0.885	0.884
755	0.885	0.887	0.885	0.885	0.883
160	0.886	0.887	0.887	0.885	0.885
765	0.886	0.887	0.886	0.885	0.885
770	0.886	0.889	0.886	0.885	0.885
775	0.887	0.887	0.885	0.885	0.884
780	0.886	0.888	0.887	0.886	0.884
705	2000	0000	2000	2000	0000

	CARY 5G SPEC	TRAPHOTOME	CARY 5G SPECTRAPHOTOMETER - BROOKS, AFB (AL/OEO)	AFB (AL/OEO)	
-			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
190	0.887	0.889	9880	0.884	0.885
795	0.887	0.888	0.887	0.885	0.886
800	0.889	0.888	0.887	0.887	0.885
805	0.888	0.889	0.887	988'0	0.886
810	0.888	0.888	988.0	9880	0.886
815	0.887	0.890	0.889	0.888	0.884
820	0.888	0.891	0.887	0.887	0.885
825	0.887	0.890	988.0	0.887	0.887
830	0.890	0.889	0.889	0.888	0.887
835	0.885	0.888	0.888	0.886	0.886
840	0.888	0.889	0.887	0.889	0.885
845	0.886	0.887	0.888	0.887	0.888
850	0.888	0.889	0.887	0.886	0.883
855	988.0	068'0	0.888	0.881	0.884
098	0.878	0.884	0.875	0.878	0.879
865	0.879	0.874	0.871	0.871	0.872
870	0.875	0.873	0.869	0.878	0.878
875	0.883	0.883	0.881	0.879	0.880
880	0.886	0.887	0.885	0.883	0.884
885	0.887	0.887	0.887	0.885	0.885
890	0.887	0.886	0.886	0.885	0.885
895	0.885	0.885	0.883	0.883	0.884
006	0.882	0.882	0.880	0.880	0.879
905	0.879	0.879	0.876	0.877	0.877
910	0.877	0.877	0.877	0.875	0.876
915	0.882	0.883	0.881	0.881	0.881
920	0.888	0.889	0.887	0.886	0.885
925	0.889		0.889	0.888	0.888
930	0.890			0.887	0.888
935	0.890	068'0	0.890	0.888	0.888
940		0.891	0.889	0.888	0.888
945		0.892		0.889	0.888
950	0.891	0.890	0.890	0.888	0.888

4	ERKIN ELMER	LAMBDA 9 - B	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	/OEO)	
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.818	0.818	0.814	0.816	0.808
455	0.820	0.820	0.817	0.818	0.810
460	0.822	0.822	0.819	0.820	0.813
465	0.824	0.824	0.820	0.822	0.814
470	0.826	0.826	0.822	0.824	0.816
475	0.827	0.827	0.823	0.825	0.817
480	0.829	0.829	0.825	0.826	0.818
485	0.829	0.829	0.825	0.827	0.819
490	0.830	0.830	0.826	0.828	0.820
495	0.831	0.830	0.827	0.828	0.821
200	0.831	0.831	0.827	0.829	0.821
505	0.831	0.831	0.827	0.829	0.821
510	0.831	0.830	0.827	0.828	0.821
515	0.831	0:830	0.826	0.828	0.820
520	0.830	0.829	0.825	0.827	0.819
525	0.829	0.828	0.824	0.826	0.819
530	0.828	0.826	0.823	0.825	0.817
535	0.826	0.825	0.822	0.823	0.816
540	0.825	0.824	0.820	0.822	0.815
545	0.824	0.823	0.819	0.821	0.814
550	0.823	0.823	0.819	0.821	0.814
555	0.824	0.823	0.819	0.821	0.813
260	0.823	0.822	0.819	0.820	0.813
565	0.822	0.821	0.818	0.820	0.812
570	0.821	0.821	0.817	0.819	0.812
575	0.820	0.819	0.816	0.818	0.811
280	0.819	0.819	0.815	0.817	0.810
585	0.820	0.819	0.816	0.817	0.810
290	0.821	0.821	0.817	0.819	0.812
595	0.824	0.824	0.820	0.822	0.815
009	0.828	0.827	0.823	0.825	0.818
902	0.831	0.830	0.826	0.828	0.822
610	0.833	0.833	0.829	0.831	0.824
615	0.835	0.834	0.831	0.833	0.826

	PERKIN ELMEI	R LAMBDA 9 - 1	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	L/OEO)	
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.836	0.836	0.832	0.833	0.827
625	0.836	0.836	0.833	0.834	0.827
630	0.837	0.837	0.833	0.835	0.828
635	0.839	0.838	0.835	0.837	0.830
640	0.843	0.842	0.839	0.840	0.834
645	0.847	0.846	0.844	0.845	0.838
059	0.853	0.852	0.849	0.850	0.844
655	0.858	0.857	0.854	0.855	0.849
099	0.862	0.862	0.858	098.0	0.854
999	998.0	0.865	0.862	0.863	0.857
0.09	0.869	0.868	0.865	0.867	098.0
675	0.871	0.870	198.0	698.0	0.862
089	0.874	0.873		0.871	0.864
685	0.875	0.875	0.871	0.873	0.867
069	0.877	0.877	0.873	0.875	0.868
969	0.878	0.878	0.874	928.0	0.869
700	0.879	0.878	0.875	0.876	0.871
705	0.880	0.878	0.875	0.877	0.871
710	0.879	0.879	0.875	0.877	0.871
715	0.881	0.880	0.877	0.878	0.872
720	0.882	0.881	0.878	0.879	0.873
725	0.883	0.881	0.878	0.880	0.873
730	0.882	0.881	0.879	0.880	0.874
735	0.883	0.882	0.879	0.880	0.874
740	0.883	0.882		0.880	0.874
745	0.882	0.882	0.880	0.880	0.874
750	0.884	0.883		0.881	0.875
755	0.885	0.883		0.882	0.876
760	0.885	0.884	0.881	0.883	0.877
765	0.886	0.885	0.881	0.882	0.876
770	0.886	0.884	0.881	0.883	0.876
775	0.886		0.881	0.882	0.876
780	0.886	0.885		0.883	0.877
785	0.886	0.885	0.882	0.883	0.878

1	PERKIN ELME	R LAMBDA 9 - B	PERKIN ELMER LAMBDA 9 - BROOKS, AFB (AL/OEO)	/OEO)	
		S	SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790	0.887	988.0	0.882	0.883	0.878
795	0.886	988.0	0.882	0.883	0.878
800	0.887	0.886	0.883	0.884	0.878
805	0.887	0.886	0.883	0.885	0.878
810	0.887	0.886	0.884	0.885	0.879
815	0.887	0.887	0.884	0.885	0.879
820	0.888	0.887	0.884	0.885	0.879
825	0.887	0.888	0.885	0.886	0.880
830	0.888	0.888	0.886	0.886	0.882
835	0.889	0.890	0.889	0.888	0.883
840	0.889	0.892	0.890	0.891	0.886
845	0.889	0.895	0.893	0.892	0.889
850	0.890	0.894	0.894	0.894	0.891
855	0.885	0.892	0.893	0.891	0.889
098	0.880		0.885	0.886	0.880
865	0.875		0.823	0.836	0.808
870	0.872		0.820	0.835	0.806
875	0.876	0.842	0.823	0.838	0.809
880	0.880		0.827	0.843	0.813
885	0.883	0.849	0.830	0.845	0.817
068	0.885	0.850	0.831	0.846	0.816
895	0.883	0.849	0.830	0.845	0.815
006	0.881	0.847	0.828	0.843	0.814
905	0.878	0.844	0.825	0.840	0.811
910	0.875	0.842	0.824	0.838	0.80
915	0.879	0.846	0.827	0.842	0.813
920	0.886	0.851	0.832	0.847	0.818
925	0.888	0.853	0.835	0.849	0.821
930	0.889	0.854	0.836	0.851	0.822
935	0.888	0.855	0.837	0.851	0.822
940	0.889		0.838	0.852	0.823
945	0.890		0.838	0.852	0.823
950	0.890	0.856	0.838	0.852	0.824

H	IITACHI U-200	0 - POLYCAST	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	ORPORATION	
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.821	0.817	0.819	0.82	0.824
455	0.824	0.819	0.821	0.823	0.825
460	0.826	0.821	0.824	0.824	0.828
465	0.828	0.823	0.825	0.826	0.829
470	0.829	0.824	0.827	0.828	0.831
475	0.83	0.826	0.828	0.829	0.832
480	0.832	0.827		0.83	0.833
485	0.833	0.828	0.83	0.832	0.834
490	0.833	0.829	0.831	0.832	0.834
495	0.834	0.829		0.832	0.835
200	0.834	0.829	0.832	0.832	0.835
505	0.834	0.829	0.832	0.832	0.835
210	0.834	0.829	0.832	0.832	0.835
515	0.834	0.828	0.831	0.832	0.834
520	0.833	0.828	0.83	0.831	0.834
525	0.832	0.826	0.829	0.83	0.832
530	0.832	0.825		0.829	0.832
535	0.829	0.824		0.827	0.829
540	0.828	0.823	į	0.826	0.829
545	0.828	0.821	0.825	0.825	0.827
550	0.827	0.821	0.824	0.824	0.826
555	0.826	0.821	0.824	0.825	0.827
260	0.826	0.821	0.824	0.824	0.826
292	0.826	0.821		0.824	0.826
570	0.825	0.819		0.823	0.825
575	0.824	0.817	0.821	0.821	0.824
280	0.824	0.817	0.821	0.821	0.824
585	0.824	0.818	0.821	0.821	0.824
290	0.826	0.82	0.822	0.823	0.825
595	0.829	0.823	0.825	0.825	0.828
009	0.832	0.825	0.829	0.829	0.832
909	0.835	0.829		0.833	0.834
610	0.838	0.832		0.835	0.836
615	0.839	0.833	0.836	0.836	0.838

	TITLE COOR	· FULICASI IE	HIJACHI U-2000 - POLYCASI IECHNOLOGY CORPORATION	OKFOKALION	
		SA	SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.84	0.834	0.836	0.838	0.839
625	0.84	0.834	0.837	0.838	0.839
089	0.841	0.835	0.838	0.838	0.84
635	0.843	0.837	0.839	0.84	0.842
640	0.846	0.84	0.843	0.844	0.846
645	0.851	0.845	0.848	0.848	0.85
059	0.856	0.85	0.853	0.854	0.855
655	0.861	0.855	0.858	0.859	0.861
099	998.0	98.0	0.863	0.863	0.865
599	698.0	0.864	0.866	0.866	0.869
029	0.872	998.0	0.869	0.869	0.872
929	0.875	0.869	0.872	0.872	0.874
089	0.876	0.872	0.874	0.874	0.875
985	0.879	0.873	0.876	0.876	0.877
069	0.88	0.875	0.877	0.877	0.879
569	0.882	0.876	0.879	0.879	0.88
200	0.882	0.877	0.879	0.88	0.881
705	0.882	0.877	0.88	0.88	0.881
710	0.883	0.878	0.88	0.881	0.882
715	0.884	0.879	0.882	0.882	0.884
720	0.885	0.88	0.883	0.883	0.885
725	0.886	0.881	0.883	0.883	0.885
730	988.0	0.881	0.884	0.884	0.885
735	0.886	0.881	0.883	0.883	0.885
740	0.886	0.882	0.884	0.884	0.886
745	0.886	0.882	0.884	0.883	0.885
750	0.887	0.883	0.885	0.885	0.886
755	0.888	0.883	0.886	0.886	0.887
091	0.888	0.883	0.886	0.886	0.887
765	0.888	0.884	0.887	0.887	0.888
170	0.889	0.884	0.887	0.887	0.889
775	0.889	0.885	0.887	0.887	0.889
780	0.889	0.885	0.887	0.887	0.889
287	08 0	0.885	0.887	0 888	0880

	HITACHI U-200	0 - POLYCAST 7	HITACHI U-2000 - POLYCAST TECHNOLOGY CORPORATION	ORPORATION	
		02	SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790	0.89	0.885	0.888	0.888	0.889
795	0.89	0.885	0.888	0.888	0.89
800	0.89	0.885	0.888	0.887	0.889
805	68.0	988.0	0.888	0.888	0.89
810	68.0	988.0	0.889	0.889	0.89
815	0.891	988.0	688.0	0.888	0.89
820	0.891	0.887	688.0	0.889	0.891
825	0.891	0.887	0.889	0.889	0.891
830	0.891	0.887	68'0	0.889	0.891
835	0.891	0.887	0.889	0.889	0.891
840	0.891	0.887	0.889	0.889	0.891
845	0.89	988.0	0.889	0.889	0.89
850	0.889	0.885	0.888	0.887	0.889
855	0.887	0.883	0.885	0.885	0.887
098	0.883	628.0	0.881	0.882	0.883
865	0.877	0.874	0.876	0.876	0.877
870	0.877	0.873	0.876	928.0	0.877
875	0.883	0.878	0.882	0.881	0.883
880		0.883	0.886	0.885	0.887
885	688'0	0.885	0.888	0.888	0.89
890		0.885	0.888	0.888	0.889
895	0	0.883	0.887	0.887	0.889
006		0.88	0.884	0.884	0.885
905		0.877	0.881	0.88	0.882
910		0.876	0.879	0.879	0.881
915		0.881	0.886	0.885	0.887
920		0.886	0.89	0.889	0.892
925		0.888	0.892	0.892	0.893
930		0.888	0.893	0.892	0.894
935		0.889	0.893	0.893	0.895
940		0.889	0.893	0.893	0.895
945		0.889	0.893	0.893	0.895
950	0.896	0.89	0.893	0.893	0.895

0	PTRONICS M	ODEL 736 RAD	OPTRONICS MODEL 736 RADIOMETER - TEXSTAR, INC.	TAR, INC.	
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.844	0.832	0.840	0.815	0.826
455	0.852	0.836	0.847	0.821	0.829
460	0.857	0.841	0.861	0.835	0.839
465	998.0	0.836	0.853	0.830	0.837
470	0.851	0.844	0.854	0.830	0.837
524	0.851	0.844	0.856	0.828	0.839
480	0.863	0.843	0.854	0.832	0.842
485	0.882	0.843	0.856	0.833	0.852
490	0.862	0.842		0.833	0.853
495	0.865	0.844	0.855	0.831	0.844
200	0.868	0.846	0.855	0.831	0.840
505	0.863	0.844	0.853	0.829	0.838
510	0.862	0.844	0.854	0.829	0.841
515	0.861	0.844	0.853	0.829	0.842
520	0.859	0.841	0.852	0.827	0.842
525	0.862	0.838	0.849	0.826	0.839
530	0.861	0.837	0.847	0.824	0.839
535	098.0	0.833		0.821	0.837
540	0.862	0.831	0.844	0.821	0.835
545	0.857	0.830	0.841	0.819	0.834
550	0.851	0.831		0.820	0.836
555	0.852	0.828		0.819	0.835
260	098.0	0.829		0.819	0.835
565	0.852	0.829		0.818	0.836
570	0.845	0.826		0.815	0.834
575	0.846	0.826	0.836	0.815	0.833
580	0.846	0.823	0.835	0.812	0.834
585	0.842	0.824	0.834	0.813	0.834
290	0.833	0.825	0.835	0.816	0.834
595	0.850	0.827		0.818	0.838
009	0.857	0.832		0.822	0.842
909	0.862			0.825	0.844
610	0.846			0.827	0.845
615	0.853	0.839	0.848	0.830	0.850

0	PTRONICS MC	DDEL 736 RAD	OPTRONICS MODEL 736 RADIOMETER - TEXSTAR, INC.	STAR, INC.	
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
620	0.858	0.842	0.851	0.833	0.853
625	0.857	0.842	0.851	0.834	0.854
089	0.857	0.842	0.853	0.835	0.856
635	0.857	0.846	0.856	0.838	0.858
640	0.862	0.847	0.857	0.841	0.861
645	0.864	0.852	0.861	0.844	0.863
929	698.0	0.857	0.865	0.850	0.868
929	0.874	0.864	0.871	0.856	0.874
099	0.879	0.867	92878	0.861	0.878
599	0.891	0.871	0880	0.865	0.882
019	0.887	0.874		698.0	0.886
675	0.888	0.876	988'0	0.871	0.889
089	0.893	0.877	888'0	0.873	0.892
989	0.894	0.878	688'0	0.875	0.894
069	0.888	0.882	0.892	0.878	0.895
569	0.892	0.883	768'0	0.879	0.894
200	0.891	0.884	0.892	0.880	0.893
705	0.899	0.884	0.892	0.880	0.894
710	0.897	0.885		0.881	0.892
715	0.903	0.887	0.895	0.883	0.894
720	0.901	0.888	968.0	0.885	0.896
725	006'0	0.888		0.883	0.893
730	0.895	0.892		988.0	0.893
735	0.901	0.890		0.885	0.893
740	0.905	0.889	0.895	0.883	0.893
745	0.905	0.890		0.883	0.893
750	0.897	0.893		0.886	0.895
755	0.908	0.891		0.885	0.894
09/	0.903	0.892	0.899	0.887	0.894
765	0.903	0.895		0.888	0.895
770	0.905	0.893	0.900	0.887	0.896
775	0.912	0.894		0.888	0.896
780	0.910	0.894		0.889	0.895
785	0.908	0.895	0.900	0.890	0.896

wavelength Rep. 1 Rep. 2 Rep. 3 Rep. 4 Rep. 4 (mm) (trans.)	0	PTRONICS MC	OPTRONICS MODEL 736 RADIOMETER - TEXSTAR, INC.	METER - TEXST	'AR, INC.	
Rep. 1 Rep. 2 Rep. 3 Rep. 4 I (trans.)			SA	MPLE 4		
(trans.) (trans.)	wavelength	Rep. 1	Rep. 2		Rep. 4	Rep. 5
0.911 0.895 0.900 0.889 0.906 0.897 0.900 0.891 0.907 0.896 0.901 0.891 0.910 0.897 0.901 0.891 0.911 0.896 0.901 0.891 0.912 0.896 0.901 0.891 0.913 0.896 0.901 0.891 0.902 0.896 0.900 0.891 0.903 0.896 0.900 0.891 0.904 0.803 0.900 0.891 0.907 0.893 0.989 0.884 0.907 0.893 0.883 0.881 0.907 0.894 0.883 0.884 0.894 0.883 0.883 0.883 0.807 0.808 0.894 0.883 0.907 0.802 0.894 0.883 0.908 0.809 0.894 0.883 0.909 0.809 0.894 0.884 0.901 0.	(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.906 0.897 0.900 0.891 0.905 0.896 0.901 0.891 0.910 0.896 0.901 0.891 0.910 0.887 0.901 0.891 0.911 0.886 0.900 0.891 0.912 0.896 0.900 0.891 0.903 0.896 0.902 0.891 0.904 0.892 0.900 0.891 0.905 0.893 0.900 0.891 0.907 0.883 0.896 0.883 0.907 0.884 0.889 0.881 0.894 0.883 0.883 0.884 0.895 0.894 0.884 0.884 0.896 0.883 0.884 0.884 0.907 0.883 0.894 0.884 0.911 0.894 0.884 0.884 0.912 0.894 0.894 0.885 0.920 0.894 0.894 0.884 0.930 0.	190	0.911	0.895	0.900	0.889	0.896
0.905 0.896 0.901 0.891 0.907 0.895 0.902 0.891 0.910 0.897 0.902 0.891 0.911 0.896 0.900 0.892 0.912 0.898 0.901 0.892 0.903 0.896 0.900 0.891 0.905 0.893 0.809 0.889 0.907 0.893 0.899 0.884 0.907 0.889 0.899 0.881 0.907 0.889 0.889 0.881 0.894 0.888 0.888 0.881 0.895 0.888 0.888 0.881 0.896 0.888 0.888 0.886 0.897 0.888 0.888 0.886 0.907 0.892 0.884 0.886 0.907 0.892 0.894 0.886 0.908 0.888 0.891 0.872 0.91 0.894 0.886 0.887 0.91 0.89	795	906.0	0.897	0.900	0.891	0.897
0.907 0.896 0.902 0.891 0.910 0.897 0.901 0.892 0.911 0.896 0.900 0.891 0.912 0.898 0.901 0.892 0.903 0.896 0.902 0.891 0.905 0.896 0.900 0.891 0.907 0.893 0.899 0.883 0.907 0.883 0.894 0.883 0.907 0.888 0.893 0.884 0.894 0.888 0.883 0.878 0.895 0.888 0.884 0.884 0.896 0.888 0.884 0.885 0.907 0.888 0.894 0.885 0.908 0.888 0.894 0.887 0.907 0.888 0.894 0.887 0.906 0.881 0.887 0.887 0.906 0.889 0.889 0.887 0.906 0.889 0.889 0.889 0.906 0.	800	0.905	968.0	0.901	0.891	0.899
0.910 0.897 0.901 0.892 0.911 0.896 0.900 0.891 0.912 0.898 0.901 0.892 0.903 0.896 0.900 0.891 0.905 0.896 0.900 0.891 0.907 0.893 0.899 0.899 0.907 0.893 0.899 0.898 0.907 0.892 0.899 0.888 0.907 0.884 0.889 0.884 0.894 0.883 0.883 0.888 0.895 0.888 0.891 0.886 0.907 0.882 0.893 0.886 0.907 0.882 0.893 0.873 0.908 0.888 0.891 0.873 0.907 0.882 0.894 0.873 0.906 0.882 0.879 0.873 0.906 0.884 0.894 0.885 0.907 0.884 0.889 0.889 0.919 0.	805	0.907	968.0	0.905	0.891	0.899
0.911 0.896 0.900 0.891 0.912 0.898 0.901 0.892 0.903 0.896 0.901 0.892 0.905 0.896 0.900 0.891 0.907 0.893 0.899 0.890 0.902 0.893 0.899 0.891 0.902 0.892 0.899 0.888 0.902 0.888 0.888 0.884 0.892 0.884 0.888 0.884 0.894 0.883 0.888 0.886 0.894 0.888 0.888 0.886 0.905 0.893 0.886 0.887 0.904 0.883 0.888 0.886 0.905 0.888 0.886 0.887 0.907 0.888 0.887 0.887 0.91 0.884 0.888 0.887 0.91 0.894 0.889 0.889 0.91 0.894 0.889 0.889 0.92 0.884<	810	0.910	0.897	0.901	0.892	0.897
0.912 0.898 0.901 0.892 0.903 0.896 0.902 0.892 0.905 0.896 0.900 0.891 0.907 0.893 0.899 0.890 0.902 0.893 0.899 0.890 0.902 0.892 0.899 0.891 0.902 0.892 0.893 0.888 0.902 0.888 0.888 0.884 0.892 0.884 0.888 0.874 0.894 0.883 0.888 0.878 0.894 0.888 0.888 0.886 0.905 0.892 0.889 0.886 0.904 0.888 0.888 0.886 0.905 0.886 0.886 0.887 0.907 0.888 0.887 0.887 0.91 0.894 0.889 0.889 0.91 0.894 0.899 0.891 0.920 0.894 0.899 0.899 0.930 0.89	815	0.911	968.0	0.900	0.891	0.897
0,903 0,896 0,902 0,892 0,905 0,896 0,900 0,891 0,907 0,893 0,899 0,891 0,902 0,893 0,890 0,891 0,902 0,892 0,899 0,888 0,907 0,893 0,884 0,884 0,899 0,884 0,883 0,884 0,899 0,884 0,883 0,874 0,894 0,884 0,883 0,874 0,894 0,884 0,884 0,886 0,907 0,883 0,884 0,886 0,907 0,883 0,884 0,886 0,907 0,888 0,891 0,886 0,907 0,888 0,887 0,886 0,907 0,888 0,887 0,877 0,896 0,888 0,889 0,887 0,906 0,888 0,888 0,887 0,907 0,884 0,889 0,889 0,907 0,	820	0.912	0.898	0.901	0.892	0.898
0.905 0.896 0.900 0.891 0.907 0.893 0.899 0.889 0.902 0.892 0.890 0.891 0.902 0.892 0.890 0.891 0.907 0.891 0.896 0.888 0.902 0.888 0.883 0.884 0.892 0.883 0.883 0.874 0.893 0.887 0.883 0.878 0.894 0.888 0.891 0.886 0.905 0.892 0.893 0.886 0.907 0.888 0.891 0.886 0.907 0.888 0.891 0.886 0.907 0.888 0.891 0.886 0.907 0.888 0.891 0.887 0.908 0.889 0.889 0.887 0.906 0.889 0.889 0.889 0.907 0.894 0.889 0.889 0.907 0.899 0.899 0.889 0.907 0.	825	0.903	968.0	0.902	0.892	0.898
0.907 0.893 0.899 0.889 0.902 0.893 0.900 0.891 0.902 0.892 0.899 0.890 0.902 0.888 0.893 0.884 0.902 0.888 0.884 0.884 0.899 0.884 0.883 0.881 0.897 0.877 0.882 0.874 0.894 0.887 0.878 0.878 0.894 0.888 0.891 0.886 0.904 0.892 0.894 0.886 0.907 0.888 0.891 0.878 0.907 0.888 0.891 0.878 0.908 0.889 0.889 0.871 0.906 0.888 0.889 0.889 0.919 0.894 0.898 0.889 0.910 0.894 0.894 0.889 0.920 0.894 0.894 0.889 0.931 0.894 0.894 0.894 0.920 0.	830	0.905	968.0	0.900	0.891	0.900
0.902 0.893 0.900 0.891 0.902 0.892 0.899 0.890 0.902 0.891 0.896 0.888 0.902 0.888 0.884 0.884 0.899 0.884 0.889 0.881 0.897 0.877 0.883 0.874 0.892 0.876 0.883 0.873 0.894 0.888 0.888 0.878 0.905 0.898 0.886 0.886 0.907 0.888 0.891 0.886 0.907 0.888 0.887 0.878 0.908 0.888 0.889 0.880 0.911 0.889 0.889 0.889 0.912 0.889 0.888 0.889 0.919 0.889 0.899 0.899 0.920 0.899 0.899 0.899 0.931 0.894 0.899 0.899 0.931 0.894 0.899 0.899 0.931 0.	835	0.907	0.893	0.899	0.889	0.898
0.902 0.892 0.899 0.890 0.907 0.891 0.896 0.888 0.902 0.888 0.893 0.884 0.899 0.884 0.889 0.881 0.897 0.877 0.883 0.873 0.894 0.887 0.873 0.873 0.896 0.887 0.883 0.873 0.907 0.888 0.891 0.886 0.907 0.888 0.892 0.886 0.907 0.888 0.892 0.886 0.907 0.888 0.892 0.887 0.911 0.882 0.892 0.887 0.912 0.884 0.889 0.873 0.913 0.894 0.882 0.882 0.911 0.894 0.895 0.885 0.912 0.894 0.894 0.889 0.922 0.895 0.897 0.897 0.923 0.895 0.897 0.897 0.920 0.	840	0.902	0.893	0.900	0.891	0.900
0.907 0.891 0.896 0.888 0.902 0.888 0.893 0.884 0.899 0.884 0.889 0.881 0.897 0.887 0.874 0.892 0.878 0.873 0.894 0.883 0.878 0.905 0.888 0.891 0.886 0.907 0.888 0.891 0.886 0.907 0.888 0.891 0.878 0.907 0.888 0.891 0.878 0.911 0.882 0.881 0.873 0.896 0.887 0.873 0.873 0.906 0.884 0.889 0.889 0.919 0.894 0.895 0.889 0.911 0.894 0.894 0.889 0.922 0.895 0.897 0.889 0.931 0.895 0.897 0.888 0.931 0.894 0.894 0.891 0.922 0.895 0.897 0.891	845	0.905	0.892	0.899	0.890	0.898
0.902 0.888 0.893 0.884 0.899 0.884 0.889 0.881 0.897 0.876 0.883 0.874 0.892 0.876 0.883 0.873 0.894 0.883 0.878 0.878 0.905 0.882 0.894 0.886 0.907 0.888 0.891 0.886 0.907 0.888 0.891 0.878 0.908 0.878 0.871 0.873 0.909 0.882 0.880 0.873 0.906 0.884 0.889 0.889 0.911 0.894 0.889 0.889 0.912 0.894 0.894 0.889 0.921 0.895 0.897 0.889 0.930 0.895 0.897 0.888 0.931 0.894 0.894 0.898 0.931 0.894 0.894 0.898 0.932 0.894 0.894 0.898 0.930 0.	820	0.907	0.891	0.896	0.888	0.895
0.899 0.884 0.889 0.881 0.897 0.877 0.883 0.874 0.892 0.876 0.882 0.873 0.894 0.883 0.878 0.878 0.898 0.894 0.883 0.886 0.907 0.892 0.894 0.886 0.907 0.888 0.891 0.882 0.907 0.882 0.887 0.878 0.896 0.878 0.873 0.873 0.906 0.882 0.887 0.873 0.906 0.884 0.889 0.889 0.911 0.894 0.889 0.889 0.912 0.894 0.894 0.889 0.930 0.895 0.897 0.889 0.931 0.895 0.894 0.888 0.931 0.894 0.894 0.888 0.931 0.894 0.894 0.898 0.932 0.894 0.894 0.899 0.932 0.	855	0.903	0.888	0.893	0.884	0.892
0.897 0.874 0.883 0.873 0.892 0.878 0.878 0.894 0.883 0.883 0.878 0.895 0.882 0.883 0.883 0.905 0.892 0.894 0.886 0.907 0.888 0.891 0.886 0.907 0.882 0.887 0.878 0.911 0.882 0.887 0.878 0.906 0.881 0.887 0.873 0.906 0.884 0.889 0.889 0.919 0.894 0.889 0.889 0.911 0.894 0.894 0.889 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.888 0.931 0.895 0.894 0.888 0.931 0.895 0.897 0.888 0.922 0.896 0.897 0.891 0.922 0.896 0.897 0.891 0.922 0.896 0.	098	668.0	0.884	0.889	0.881	0.888
0.892 0.876 0.882 0.878 0.894 0.888 0.888 0.878 0.898 0.891 0.883 0.883 0.905 0.892 0.894 0.886 0.904 0.892 0.896 0.886 0.907 0.888 0.891 0.878 0.911 0.882 0.873 0.871 0.896 0.881 0.887 0.873 0.906 0.881 0.889 0.880 0.919 0.894 0.894 0.888 0.922 0.894 0.894 0.889 0.930 0.895 0.897 0.889 0.931 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.930 0.895 0.897 0.888 0.931 0.894 0.894 0.891 0.922 0.897 0.891 0.891	865	0.897	0.877	0.883	0.874	0.883
0.894 0.883 0.878 0.898 0.888 0.891 0.883 0.905 0.892 0.894 0.886 0.904 0.892 0.895 0.886 0.907 0.888 0.891 0.882 0.911 0.882 0.879 0.878 0.896 0.881 0.880 0.873 0.906 0.884 0.888 0.886 0.911 0.894 0.894 0.894 0.888 0.922 0.895 0.897 0.887 0.930 0.895 0.894 0.887 0.931 0.895 0.894 0.887 0.931 0.895 0.897 0.887 0.932 0.895 0.894 0.894 0.932 0.895 0.894 0.894 0.932 0.895 0.897 0.891	870	0.892	0.876	0.882	0.873	0.882
0.898 0.898 0.893 0.883 0.905 0.892 0.894 0.886 0.904 0.892 0.894 0.886 0.907 0.882 0.891 0.882 0.911 0.882 0.873 0.873 0.896 0.881 0.880 0.873 0.906 0.884 0.888 0.885 0.911 0.894 0.894 0.885 0.912 0.894 0.894 0.888 0.930 0.895 0.897 0.889 0.931 0.895 0.897 0.888 0.931 0.895 0.894 0.888 0.932 0.894 0.894 0.888 0.932 0.894 0.894 0.891 0.922 0.894 0.894 0.891	875	0.894	0.883	0.888	0.878	0.888
0.905 0.892 0.894 0.886 0.904 0.892 0.895 0.886 0.907 0.888 0.891 0.882 0.911 0.882 0.887 0.878 0.896 0.881 0.873 0.873 0.906 0.884 0.888 0.880 0.919 0.894 0.894 0.888 0.921 0.894 0.894 0.889 0.930 0.895 0.897 0.889 0.931 0.895 0.897 0.888 0.920 0.895 0.897 0.888 0.931 0.894 0.894 0.888 0.931 0.895 0.897 0.888 0.920 0.895 0.897 0.898 0.922 0.896 0.897 0.891	088	0.898	0.888	0.891	0.883	0.892
0.904 0.892 0.895 0.886 0.907 0.888 0.891 0.882 0.911 0.882 0.887 0.878 0.896 0.878 0.873 0.871 0.896 0.881 0.880 0.873 0.919 0.894 0.892 0.885 0.911 0.894 0.894 0.888 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.931 0.895 0.897 0.889 0.920 0.895 0.897 0.888 0.921 0.894 0.894 0.888	885	0.905	0.892	0.894	0.886	0.896
0.907 0.888 0.891 0.882 0.911 0.882 0.887 0.878 0.898 0.878 0.871 0.896 0.881 0.889 0.873 0.906 0.884 0.888 0.880 0.919 0.894 0.894 0.888 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.895 0.897 0.888 0.931 0.895 0.897 0.888 0.920 0.895 0.897 0.888 0.931 0.894 0.894 0.888	068	0.904	0.892	0.895	0.886	0.896
0.911 0.882 0.887 0.878 0.898 0.878 0.873 0.896 0.881 0.880 0.873 0.906 0.884 0.888 0.880 0.919 0.894 0.894 0.888 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.895 0.897 0.887 0.920 0.895 0.897 0.887 0.921 0.895 0.897 0.888 0.922 0.894 0.894 0.888 0.921 0.894 0.894 0.891	895	0.907	0.888	0.891	0.882	0.893
0.898 0.878 0.879 0.871 0.896 0.881 0.880 0.873 0.906 0.884 0.888 0.880 0.919 0.894 0.892 0.885 0.911 0.894 0.894 0.888 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.921 0.896 0.897 0.891	006	0.911	0.882	0.887	0.878	0.889
0.896 0.881 0.880 0.873 0.906 0.884 0.888 0.880 0.919 0.890 0.892 0.885 0.911 0.894 0.894 0.888 0.932 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.921 0.894 0.894 0.891 0.922 0.897 0.891 0.891	905	0.898	0.878	0.879	0.871	0.884
0.906 0.884 0.888 0.880 0.919 0.890 0.892 0.885 0.911 0.894 0.888 0.888 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.922 0.896 0.897 0.891 0.922 0.897 0.897 0.891	910	968.0	0.881	0.880	0.873	0.886
0.919 0.890 0.892 0.885 0.911 0.894 0.894 0.888 0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.922 0.897 0.897 0.891	915	0.906	0.884	0.888	0.880	0.891
0.911 0.894 0.894 0.888 0.922 0.895 0.897 0.889 0.930 0.894 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.922 0.897 0.899 0.892	920	0.919	0.890	0.892	0.885	0.896
0.922 0.895 0.897 0.889 0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.922 0.897 0.899 0.892	925	0.911	0.894	0.894	0.888	0.899
0.930 0.895 0.897 0.887 0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.922 0.897 0.899 0.892	930	0.922	0.895	0.897	0.889	0.900
0.931 0.894 0.894 0.888 0.920 0.896 0.897 0.891 0.922 0.897 0.899 0.892	935	0.930	0.895	0.897	0.887	0.900
0.920 0.896 0.897 0.891 0.922 0.897 0.892 0.892	940	0.931	0.894	0.894	0.888	0.899
0.922 0.897 0.899 0.892	945	0.920	0.896	0.897	0.891	0.902
	950	0.922	0.897	0.899	0.892	0.903

	UV/VIS/NIR SPE	CTROPHOTO	METER-SIERRA	UV/VIS/NIR SPECTROPHOTOMETER-SIERRACIN/SYLMAR CORP.	ORP.
			SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
450	0.797	0.799	0.798	0.798	0.800
455	0.800	0.802	0.801	0.801	0.802
460	0.803	0.805		0.804	0.805
465	0.805	0.808		0.805	0.807
470	0.807	0.810		0.807	0.808
475	0.808	0.811	608.0	608.0	0.810
480	0.810	0.813	0.811	0.810	0.811
485	0.811	0.814		0.812	0.814
490	0.813	0.815	0.813	0.814	0.814
495	0.813	0.816		0.814	0.816
500	0.814	0.817	0.815	0.814	0.815
505	0.815	0.817	0.815	0.814	0.815
510	0.814	0.817		0.815	0.815
515	0.815	0.817	0.815	0.814	0.815
520		0.816		0.814	0.815
525		0.816		0.813	0.815
530		0.814		0.812	0.813
535		0.814		0.811	0.813
540		0.812	0.810	0.810	0.811
545		0.811		0.809	0.811
550		0.811		0.810	0.811
555		0.812	0.809	608.0	0.811
260		0.811		0.808	0.810
565		0.811		0.80	0.80
570		0.810		0.808	0.809
575	-	0.809		0.807	0.808
580		0.808		908.0	0.808
585		0.80		0.808	0.808
590		0.810		0.806	0.811
595		0.814		0.812	0.813
009		0.817		0.815	0.817
605		0.820		0.819	0.820
610		0.823		0.822	0.823
615	0.824	0.825	0.823	0.823	0.825

wavelength Rep. 1 Rep. 2 Rep. 3 Kep. 4 R (mm) (trans.)	<u>n</u>	V/VIS/NIR SP	ECTROPHOTO	UV/VIS/NIR SPECTROPHOTOMETER-SIERRACIN/SYLMAR CORP.	IN/SYLMAR CC	ORP.
Rep. 1 Rep. 2 Rep. 3 Rep. 4 F. (trans.)				SAMPLE 4		
(trans.) (trans.)	wavelength	Rep. 1			Rep. 4	Rep. 5
0.824 0.826 0.824 0.824 0.824 0.825 0.824 0.825 0.825 0.828 0.828 0.828 0.828 0.833 0.833 0.833 0.831 0.833 0.832 0.834 0.837 0.833 0.833 0.834 0.837 0.834 0.834 0.834 0.846 0.844 0.844 0.842 0.836 0.846 0.849 0.844 0.842 0.836 0.851 0.862 0.852 0.858 0.858 0.852 0.852 0.856 0.856 0.856 0.853 0.865 0.865 0.865 0.865 0.866 0.867 0.866 0.868 0.868 0.867 0.866 0.867 0.866 0.868 0.869 0.871 0.867 0.868 0.868 0.869 0.871 0.872 0.873 0.873 0.871 0.872	(mm)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
0.824 0.826 0.825 0.824 0.825 0.825 0.825 0.825 0.827 0.833 0.832 0.831 0.837 0.833 0.832 0.835 0.837 0.834 0.834 0.842 0.841 0.844 0.842 0.842 0.842 0.843 0.842 0.842 0.844 0.844 0.842 0.842 0.851 0.853 0.852 0.852 0.852 0.853 0.852 0.852 0.853 0.862 0.852 0.852 0.852 0.862 0.862 0.862 0.863 0.865 0.865 0.865 0.864 0.865 0.865 0.865 0.865 0.867 0.866 0.867 0.866 0.871 0.867 0.867 0.869 0.871 0.867 0.867 0.871 0.872 0.873 0.877 0.872 0.	620	0.824	0.826	0.824	0.824	0.826
0.825 0.827 0.826 0.828 0.828 0.833 0.832 0.831 0.831 0.832 0.831 0.832 0.831 0.832 0.832 0.832 0.841 0.842 0.842 0.842 0.846 0.849 0.847 0.842 0.846 0.848 0.842 0.852 0.851 0.853 0.852 0.852 0.852 0.853 0.856 0.856 0.852 0.856 0.856 0.856 0.863 0.864 0.865 0.865 0.865 0.867 0.866 0.866 0.866 0.867 0.866 0.866 0.867 0.867 0.866 0.866 0.869 0.871 0.872 0.869 0.869 0.871 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.	625	0.824	0.826	0.825	0.824	0.826
0.828 0.830 0.828 0.828 0.831 0.832 0.831 0.831 0.831 0.832 0.835 0.836 0.841 0.842 0.842 0.847 0.846 0.849 0.847 0.847 0.851 0.853 0.856 0.856 0.855 0.853 0.858 0.856 0.857 0.856 0.856 0.856 0.867 0.867 0.866 0.867 0.869 0.867 0.868 0.866 0.869 0.867 0.866 0.867 0.869 0.871 0.869 0.869 0.869 0.871 0.872 0.869 0.870 0.871 0.872 0.873 0.871 0.872 0.874 0.874 0.872 0.873 0.874 0.874 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.	630	0.825	0.827	0.826	0.825	0.827
0.831 0.833 0.831 0.836 0.841 0.842 0.842 0.842 0.841 0.844 0.842 0.842 0.846 0.847 0.841 0.842 0.851 0.853 0.856 0.856 0.852 0.858 0.858 0.856 0.853 0.862 0.862 0.862 0.860 0.862 0.862 0.863 0.863 0.864 0.864 0.865 0.865 0.867 0.868 0.868 0.866 0.867 0.868 0.868 0.869 0.871 0.869 0.869 0.869 0.871 0.872 0.872 0.870 0.872 0.873 0.873 0.871 0.872 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.	635	0.828		0.828	0.828	0.829
0.837 0.838 0.837 0.836 0.841 0.844 0.842 0.842 0.846 0.847 0.847 0.847 0.846 0.847 0.847 0.847 0.851 0.853 0.858 0.858 0.855 0.858 0.858 0.858 0.860 0.862 0.862 0.862 0.863 0.865 0.865 0.865 0.863 0.865 0.866 0.867 0.864 0.877 0.869 0.869 0.865 0.876 0.869 0.869 0.866 0.871 0.872 0.872 0.875 0.875 0.873 0.873 0.877 0.875 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.875 0.875 0.874 0.875 0.875 0.876 0.875 0.875 0.876 0.877 0.876 0.	640	0.831	0.833	0.832	0.831	0.832
0.841 0.842 0.842 0.842 0.846 0.849 0.847 0.847 0.851 0.853 0.853 0.851 0.855 0.858 0.858 0.858 0.857 0.860 0.858 0.858 0.860 0.862 0.861 0.862 0.863 0.865 0.865 0.865 0.865 0.867 0.866 0.865 0.865 0.870 0.866 0.866 0.866 0.871 0.869 0.866 0.870 0.871 0.872 0.873 0.871 0.872 0.873 0.873 0.872 0.873 0.873 0.874 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.875 0.875 0.874 0.875 0.875 0.876 0.875 0.875 0.875 0.876 0.875 0.	645	0.837	0.838	0.837	0.836	0.838
0.846 0.849 0.847 0.847 0.851 0.853 0.852 0.851 0.852 0.853 0.856 0.856 0.857 0.860 0.858 0.858 0.860 0.862 0.861 0.862 0.863 0.865 0.865 0.865 0.865 0.867 0.866 0.867 0.866 0.870 0.866 0.867 0.869 0.871 0.869 0.869 0.870 0.871 0.872 0.872 0.871 0.872 0.873 0.873 0.872 0.873 0.873 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.875 0.875 0.874 0.875 0.875 0.876 0.875 0.875 0.875 0.876 0.875 0.875 0.875 0.876 0.876 0.	650	0.841	0.844	0.842	0.842	0.843
0.851 0.852 0.851 0.855 0.858 0.856 0.857 0.860 0.858 0.858 0.860 0.862 0.861 0.862 0.863 0.863 0.865 0.865 0.865 0.865 0.866 0.865 0.866 0.870 0.866 0.867 0.869 0.871 0.869 0.869 0.869 0.871 0.872 0.873 0.870 0.872 0.873 0.873 0.871 0.872 0.873 0.873 0.872 0.873 0.873 0.873 0.873 0.874 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.875 0.874 0.875 0.875 0.876 0.875 0.875 0.876 0.877 0.877 0.877 0.877 0.877 0.877 0.877 0.877	655	0.846		0.847	0.847	0.848
0.855 0.858 0.855 0.856 0.867 0.860 0.862 0.861 0.863 0.862 0.862 0.862 0.863 0.863 0.865 0.865 0.865 0.865 0.866 0.865 0.866 0.870 0.866 0.867 0.869 0.871 0.869 0.869 0.870 0.871 0.872 0.873 0.871 0.872 0.873 0.873 0.872 0.873 0.873 0.873 0.873 0.874 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.875 0.875 0.876 0.875 0.875 0.876 0.877 0.877 0.878 0.877 0.877 0.879 0.879 0.879 0.877 0.879 0.	099	0.851	0.853	0.852	0.851	0.853
0.857 0.860 0.858 0.858 0.860 0.862 0.861 0.861 0.863 0.865 0.863 0.865 0.865 0.866 0.865 0.865 0.866 0.869 0.866 0.867 0.869 0.870 0.869 0.868 0.869 0.871 0.869 0.869 0.869 0.871 0.869 0.868 0.870 0.871 0.870 0.869 0.871 0.871 0.870 0.870 0.872 0.873 0.872 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.875 0.875 0.874 0.875 0.875 0.876 0.875 0.875 0.876 0.876 0.876 0.877 0.877 0.876 0.877 0.879 0.879 0.879 0.879 0.	999	0.855		0.855	0.856	0.857
0.860 0.862 0.861 0.862 0.863 0.865 0.863 0.862 0.865 0.866 0.865 0.865 0.866 0.869 0.866 0.868 0.869 0.870 0.869 0.868 0.869 0.871 0.869 0.868 0.869 0.871 0.869 0.868 0.870 0.871 0.870 0.869 0.871 0.871 0.870 0.869 0.872 0.873 0.872 0.872 0.873 0.873 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.875 0.876 0.875 0.875 0.875 0.876 0.876 0.877 0.876 0.876 0.877 0.878 0.878 0.877 0.879 0.879 0.879 0.879 0.879 0.	029	0.857	098.0	0.858	0.858	0.858
0.863 0.865 0.865 0.865 0.866 0.865 0.866 0.869 0.868 0.869 0.870 0.869 0.869 0.871 0.869 0.869 0.869 0.871 0.869 0.869 0.869 0.871 0.869 0.869 0.870 0.872 0.872 0.872 0.871 0.872 0.872 0.872 0.872 0.873 0.873 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.875 0.876 0.875 0.875 0.876 0.876 0.876 0.877 0.876 0.876 0.877 0.878 0.878 0.878 0.877 0.879 0.877 0.878 0.879 0.879 0.879 0.879 0.879<	675	0.860		0.861	0.861	0.862
0.865 0.867 0.866 0.865 0.866 0.869 0.869 0.867 0.869 0.870 0.869 0.868 0.869 0.871 0.869 0.869 0.869 0.871 0.869 0.869 0.870 0.871 0.872 0.870 0.871 0.873 0.872 0.872 0.872 0.873 0.873 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.875 0.876 0.874 0.875 0.876 0.876 0.875 0.876 0.876 0.876 0.877 0.879 0.878 0.878 0.877 0.878 0.878 0.879 0.879 0.879 0.879 0.879 0.879 0.	089	0.863		0.863	0.862	0.864
0.866 0.869 0.866 0.867 0.869 0.870 0.869 0.868 0.869 0.871 0.869 0.869 0.869 0.871 0.872 0.869 0.870 0.871 0.872 0.872 0.871 0.873 0.872 0.872 0.872 0.873 0.873 0.873 0.873 0.874 0.873 0.873 0.874 0.875 0.874 0.874 0.875 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.875 0.876 0.875 0.875 0.876 0.876 0.875 0.877 0.876 0.876 0.877 0.878 0.878 0.878 0.879 0.879 0.879 0.879 0.879 0.879 0.879	985	0.865		998.0	0.865	0.866
0.869 0.870 0.869 0.868 0.869 0.871 0.869 0.869 0.869 0.871 0.869 0.869 0.870 0.872 0.872 0.872 0.871 0.873 0.872 0.872 0.872 0.873 0.872 0.873 0.873 0.874 0.873 0.873 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.875 0.876 0.875 0.875 0.875 0.876 0.876 0.875 0.876 0.876 0.877 0.878 0.878 0.878 0.877 0.878 0.877 0.879 0.878 0.879 0.879 0.879 0.879 0.879 0.879 0.879	069	0.866		0.866	0.867	0.868
0.869 0.871 0.869 0.869 0.869 0.871 0.870 0.869 0.870 0.872 0.872 0.872 0.871 0.873 0.872 0.872 0.872 0.873 0.872 0.872 0.873 0.874 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.875 0.875 0.875 0.875 0.875 0.876 0.875 0.876 0.876 0.877 0.878 0.876 0.876 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.877 0.879 0.879 0.879 0.879 0.879 0.879 0.879 0.879	695	0.869		0.869	0.868	0.869
0.869 0.871 0.870 0.869 0.870 0.872 0.872 0.872 0.871 0.873 0.872 0.872 0.872 0.873 0.872 0.872 0.873 0.873 0.873 0.873 0.873 0.874 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.875 0.875 0.874 0.875 0.875 0.875 0.875 0.875 0.876 0.876 0.876 0.877 0.876 0.876 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.877 0.879 0.878 0.878 0.879 0.879 0.879 0.879 0.879 0.879 0.879 0.879	100	0.869		0.869	0.869	0.870
0.870 0.872 0.870 0.872 0.871 0.873 0.872 0.872 0.872 0.873 0.873 0.872 0.873 0.873 0.873 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.877 0.875 0.874 0.874 0.877 0.875 0.876 0.875 0.875 0.876 0.876 0.875 0.875 0.876 0.876 0.877 0.878 0.876 0.876 0.877 0.878 0.876 0.876 0.877 0.878 0.878 0.878 0.877 0.879 0.878 0.878 0.878 0.879 0.879 0.879 0.879 0.879 0.879 0.879	705	0.869		0.870	0.869	0.871
0.871 0.872 0.872 0.872 0.873 0.872 0.873 0.873 0.873 0.874 0.873 0.873 0.875 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.877 0.875 0.874 0.875 0.874 0.875 0.875 0.876 0.876 0.875 0.876 0.877 0.876 0.876 0.877 0.876 0.876 0.877 0.878 0.876 0.877 0.878 0.878 0.877 0.878 0.878 0.878 0.879 0.878 0.879 0.879 0.879 0.879 0.879 0.879	710	0.870		0.870	0.870	0.871
0.872 0.873 0.873 0.873 0.873 0.875 0.873 0.873 0.875 0.874 0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.874 0.875 0.875 0.875 0.876 0.875 0.875 0.876 0.876 0.877 0.878 0.876 0.876 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.878 0.877 0.878 0.879 0.879 0.877 0.877 0.879 0.879 0.879 0.879	715	0.871	0.873	0.872	0.872	0.873
0.873 0.875 0.873 0.873 0.875 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.875 0.875 0.875 0.876 0.876 0.876 0.878 0.876 0.876 0.877 0.878 0.877 0.876 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.879 0.878 0.879 0.879 0.879 0.879 0.879	720	0.872	918.0	0.873	0.872	0.874
0.875 0.876 0.874 0.873 0.873 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.877 0.875 0.874 0.875 0.875 0.875 0.876 0.876 0.878 0.876 0.876 0.877 0.878 0.877 0.876 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.878 0.878 0.878 0.879 0.879 0.879 0.879	725	0.873		0.873	0.873	0.874
0.873 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.874 0.875 0.874 0.874 0.874 0.875 0.875 0.875 0.875 0.875 0.876 0.876 0.877 0.878 0.876 0.876 0.877 0.878 0.877 0.878 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.879 0.878 0.878 0.879 0.879 0.879 0.879	730	0.875		0.874	0.873	0.875
0.874 0.876 0.874 0.874 0.874 0.877 0.875 0.874 0.874 0.877 0.875 0.875 0.875 0.875 0.876 0.876 0.877 0.876 0.877 0.878 0.877 0.877 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.878 0.879 0.879 0.878 0.879 0.879 0.879 0.879 0.877 0.879	735	0.873		0.874	0.874	0.874
0.874 0.877 0.875 0.874 0.874 0.878 0.875 0.875 0.875 0.876 0.876 0.876 0.877 0.877 0.877 0.877 0.877 0.878 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.878 0.878 0.878 0.878 0.880 0.877 0.877 0.879 0.879 0.879 0.877	740	0.874		0.874	0.874	0.875
0.874 0.878 0.875 0.875 0.875 0.878 0.876 0.876 0.876 0.877 0.876 0.876 0.877 0.878 0.877 0.878 0.877 0.878 0.878 0.878 0.877 0.880 0.877 0.877 0.878 0.880 0.877 0.877	745	0.874		0.875	0.874	0.875
0.875 0.878 0.875 0.876 0.876 0.878 0.876 0.877 0.879 0.878 0.877 0.878 0.878 0.877 0.878 0.878 0.877 0.878 0.878 0.878 0.878 0.878 0.879 0.879 0.877 0.879 0.879 0.877	750	0.874		0.875	0.875	0.876
0.876 0.878 0.877 0.876 0.877 0.879 0.878 0.877 0.877 0.881 0.878 0.878 0.877 0.879 0.878 0.878 0.878 0.878 0.879 0.879 0.879	755	0.875		0.875	0.876	0.877
0.877 0.878 0.878 0.878 0.877 0.881 0.878 0.878 0.877 0.879 0.878 0.878 0.878 0.877 0.877 0.879 0.879 0.879	092	0.876		0.877	0.876	0.878
0.877 0.881 0.878 0.878 0.877 0.879 0.878 0.878 0.877 0.877 0.879 0.877 0.879	765	0.877		0.878	0.877	0.879
0.877 0.879 0.877 0.878 0.878 0.879 0.877 0.879 0.879 0.879	770	0.877		0.878	0.878	0.879
0.878 0.880 0.877 0.879 0.879 0.879	775	0.877		0.877	0.878	0.878
0.879 0.880 0.879 0.879	780	0.878		0.877	0.877	0.878
	785	0.879		0.879	0.879	0.880

n	V/VIS/NIR SPE	CTROPHOTOR	METER-SIERRA	UV/VIS/NIR SPECTROPHOTOMETER-SIERRACIN/SYLMAR CORP.	ORP.
		\Box	SAMPLE 4		
wavelength	Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5
(mu)	(trans.)	(trans.)	(trans.)	(trans.)	(trans.)
790	0.878	0.882	0.879	0.878	0.879
795	0.878	0.880	0.878	0.879	0.880
800	0.878	0.882	0.879	0.879	0.880
802	0.878	0.882	0.879	0.879	0.879
810	0.879	0.882	0.879	0.878	0.879
815	0.879	0.882	0.880	0.881	0.881
820	0.880	0.882	0.881	0.879	0.881
825	0.879	0.882	0.880	0.880	0.882
830	0.880	0.885	0.883	0.879	0.881
835	0.882	0.884	0.883	0.880	0.881
840	0.880	0.885	0.881	0.879	0.882
845	0.879	0.879	0880	0.880	0.882
820	0.884	0.884	678.0	0.878	0.882
855	0.877	0.880	0.878	0.875	0.879
098	0.870	0.876	0.873	0.872	0.876
865	0.873	0.880	0.875	0.864	0.866
870	0.873	0.884	928.0	0.864	0.866
875	698.0	0.872	0.870	0.868	0.869
880	0.879	0.882	0.883	0.874	0.877
885	0.880	0.889	0.887	0.878	0.879
068	0.883	0.886	0.882	0.875	0.876
895	0.877	0.883	0.883	0.875	0.876
006	0.883	0.880	0.879	0.872	0.873
905	0.883	0.882	0.879	0.867	0.870
910	0.869	0.879	0.877	0.867	0.870
915	0.870	0.884	0.875	0.874	0.876
920	0.879	0.891	0.888	0.878	0.880
925	0.889	0.895	0.890	0.879	0.881
930	0.879	0.885	0.880	0.881	0.881
935	0.888	0.893	0.893	0.883	0.883
940	0.890	0.893		0.881	0.883
945	0.877	0.888		0.881	0.883
950	0.888	0.895	0.893	0.885	0.884